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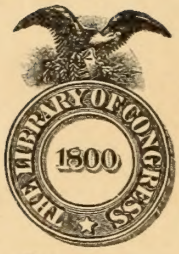

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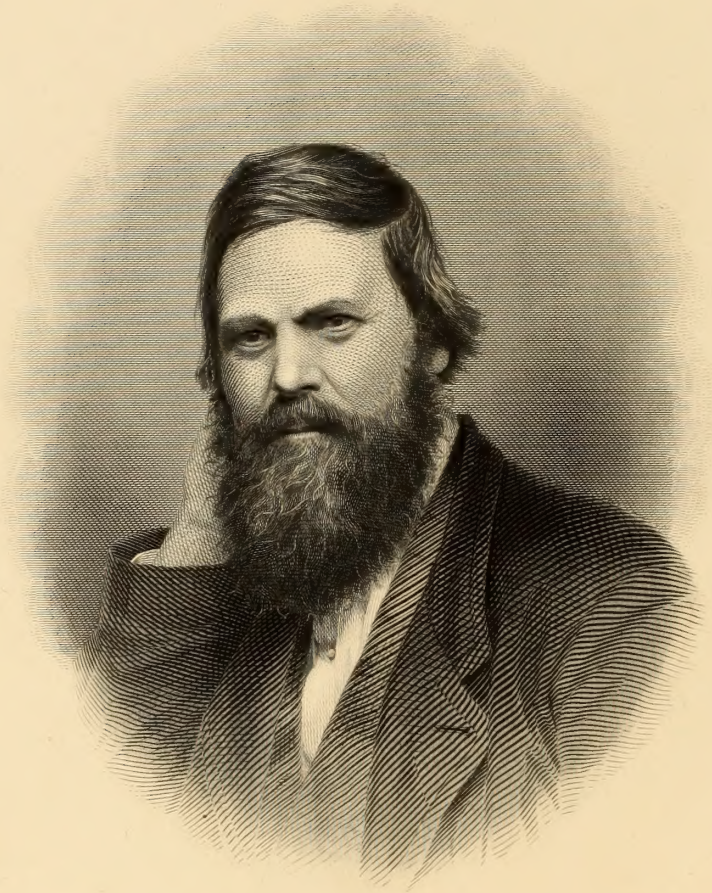

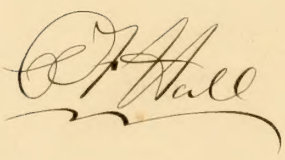

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NARRATIVE

OF THE

SECOND ARCTIC EXPEDITION

MADE BY

CHARLES F. HALL:

HIS VOYAGE TO REPULSE BAY, SLEDGE JOURNEYS TO THE STRAITS OF FURY AND HECLA AND TO KING WILLIAM'S LAND,

AND

RESIDENCE AMONG THE ESKIMOS DURING THE YEARS 1864-'69.

EDITED UNDER THE ORDERS OF THE HON. SECRETARY OF THE NAVY.

BY

PROF. J. E. NOURSE, U. S. N.

U. S. Naval Observatory,

1879.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1879.

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LETTER FROM THE SECRETARY OF THE NAVY, COMMUNICATING, IN ANSWER TO A SENATE RESOLUTION OF FEBRUARY 6, 1877, THE NARRATIVE OF THE SECOND EXPEDITION TO THE ARCTIC REGIONS, MADE BY THE LATE CAPT. C. F. HALL, DURING THE YEARS 1864 TO 1869.

JANUARY 14, 1879.—Ordered to lie on the table and be printed.

NAVY DEPARTMENT,

Washington, January 14, 1879.

SIR: On the 6th of February, 1877, the following resolution was adopted by the Senate, on motion of Mr. Sargent:

Resolved, That the Secretary of the Navy furnish, through the Superintendent of the Naval Observatory, a narrative of the second expedition to the Arctic Regions, made by the late Capt. C. F. Hall, during the years 1864 to 1869, said narrative to be compiled from the manuscripts purchased from the widow of said Hall by act of Congress approved January 23, 1874.

The Narrative has been prepared in accordance with the resolution, and I have the honor to transmit the same herewith, accompanied by a letter from Rear-Admiral John Rodgers, Superintendent of the Naval Observatory, dated the 11th instant, and a communication from Prof. J. E. Nourse, who was directed to prepare the Narrative.

I am, very respectfully,

R. W. THOMPSON,

Secretary of the Navy.

Hon. WILLIAM A. WHEELER,

Vice-President of the United States.

U. S. Naval Observatory,

January 10, 1879.

Admiral: I have the honor to submit herewith the Narrative of the residence of the late Capt. C. F. Hall among the Eskimos, which has been prepared for the Senate, by the orders of the Department, under your superintendence and advice.

The Manuscripts of Captain Hall's explorations, purchased by Congress, have been found to present a mass of writing in the form of journals, note-books, and even scattered leaves, exhibiting a large amount of close observation, the results of which the lamented explorer more than once expressed his desire to arrange with his own hand and publish.

In preparing the Narrative the aim has been to exercise a close discrimination in the selection of the material which seemed the most valuable chiefly in its geographical and ethnological bearings. The astronomical and meteorological observations, reduced from Hall's journal entries, are given in Appendixes I and II. Mr. R. W. D. Bryan, late of the Polaris Expedition, assisting in the preparation of the Narrative, under the orders of the Department, has rendered very valuable services in arranging and condensing the material found in the journals and in superintending the astronomical and meteorological reductions. Prof. C. Abbe will kindly re-examine the last

named. Through the courtesy of Professor Baird, Secretary of the Smithsonian Institution, and of Professor White, United States Geologist, a valuable paper on the geological collections brought by Hall to the United States has been furnished from the pen of Prof. B. K. Emerson, of Amherst College.

The two years preceding this expedition being years of severe labor spent by Captain Hall in preparing for the renewal of his earlier work which had the same objects in view, the Narrative commences with this period of preparation, and is thus legitimately linked to the objects of Sir John Franklin's Expedition of 1845 and to the expeditions sent out for his relief. In a Preliminary Chapter the results of these are given in tabulated form, with maps illustrative of the general progress of geographical exploration secured by these expeditions.

I have to acknowledge the courtesy shown by Sir Leopold McClintock and by Admiral R. Collinson, R. N., in the communications received from them; the kindness of Miss Sophia Cracroft in returning two of Hall's journals which had been sent by him to Lady Franklin, and in the loan of a portrait of Sir John which has been reproduced by the Bureau of Engraving and Printing; and the receipt through the State Department of valued statistical information collated by United States Consul McDougal, of Dundee. The assistance rendered to Hall by his numerous friends is named within the text, from his own acknowledgments.

I am, sir, very respectfully, your obedient servant,

J. E. NOURSE,

Prof., U. S. N.

Rear-Admiral JOHN RODGERS,

Superintendent.

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ERRATA.

Page 35, for (Appendix) VIII read V.
Page 37, for (Messrs.) Poillou read *Poillon.*
Page 42, for whaling brig read *barque.*
Page 176, for Eggers read *Eggert's.*
Page 297, for 80° below zero read 50.

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PRELIMINARY CHAPTER.

PRELIMINARY CHAPTER.

HALL'S THREE EXPEDITIONS—PURCHASE OF HIS MANUSCRIPTS BY CONGRESS—RESOLUTION OF THE SENATE OF FEBRUARY 6, 1877—THE THREE EXPEDITIONS COMPARED—CONNECTION OF THE FIRST AND OF THE SECOND WITH THE FRANKLIN EXPEDITION—CORRESPONDENCE WITH LADY FRANKLIN—HALL'S "APPEAL" AND LECTURE IN 1860—TABLES OF ENGLISH AND OF AMERICAN EXPLORATIONS FOR THE NORTHWEST PASSAGE AND FOR THE RELIEF OF FRANKLIN—BENEFICIAL RESULTS AND ESTIMATED COSTS OF THESE EXPEDITIONS, PUBLIC AND PRIVATE, STATED IN A LETTER FROM ADMIRAL SIR LEOPOLD MCCLINTOCK, R. N.—THE SMALL PERCENTAGE OF DEATHS—ARCTIC AUTHORITIES, 1818–1860.

The late Capt. Charles Francis Hall, commander of the North Polar Expedition of 1871, United States steamship Polaris, had previously made two voyages, or, as he has called them, "Expeditions," to the northern shores of America.

The first of these embraced a period of two years and three months, from May 29, 1860, to September 13, 1862, furnishing the material for his "Arctic Researches," which he published in 1864

The second voyage and residence among the Eskimos occupied the longer period of five years and three months, from June 30, 1864, to September 26, 1869; but of this he left no narrative, becoming absorbed immediately on his return in preparing for his third voyage, that of the Polaris. On board of this vessel his sudden death occurred November 8, 1871.

Under the act of Congress approved June 23, 1874, the Navy

Department purchased from his family, for the sum of $15,000, the manuscripts of his several explorations, some of which were made use of by the late Admiral Davis in preparing for the Department the widely-appreciated "Narrative of the North Polar Expedition."* The larger number of the manuscripts, however, have been found to belong to the Second Expedition, and form the basis of the Narrative now prepared by the orders of the Department, to meet the call of the Senate in the resolution adopted, on the motion of Hon. A. A. Sargent, February 6, 1877.

Hall's journals and notes of the years 1864 to 1869, kept generally with much care, present a few blanks; chiefly because an unbroken diary was made impossible by the privations of an ill-furnished Arctic life His private correspondence, courteously loaned by his steadfast friend, Mr. J. C. Brevoort, and by the family of the late Mr. Henry Grinnell, supplements in part these deficiencies. It discloses also repulses experienced while seeking assistance for this second voyage which must have severely schooled his energies.

His three enterprises had a common object in geographical discovery. The Polaris voyage, however, finds its distinctive separation from his earlier objects in its aiming at solving the problem of the Pole. In this point, and in its being in the fullest sense an expedition, and not the itinerary of a traveler with a few native attendants, it claims a much higher place than the Narrative now presented.

But the journals of the years 1864–'69 exhibit a longer experience by Mr. Hall in Arctic life, and consequently with the customs, traditions, and superstitions of the Innuits than has fallen to the lot of other Arctic

* The third edition of this Narrative was ordered by Congress June 7, 1878, to be on sale under the provisions of the act of that date. This edition is exhausted.

travelers. His Second Expedition, as distinguished from the Third, will also be found to be closely connected with the First and with the course of American and English Arctic exploration during the preceding twenty years; for the two voyages of 1860–'62 and of 1864–'69 were alike "FRANKLIN RELIEF" Expeditions, in which Hall endeavored to complete the work begun by Lieutenant De Haven, Dr. E. K. Kane, of the United States Navy, and their associates, and by more than thirty English relief parties which had preceded them.

Sympathy for the mysterious fate of Franklin's Expedition was universal. In Hall it kindled a spirit of enthusiasm which failed him only with his life It early became his controling idea. Through the nine years from May, 1850 when Secretary Preston's Instructions for the First Grinnell Expedition issued to Lieutenant De Haven, to the return of the English steamer Fox, he was steadily increasing his Arctic library, and devoting every spare hour to Arctic study; and his notes and comments show his interest in all such returns from the searched region as Dr. Rae, in 1854, brought from Boothia, De Haven and Kane from Beechy Island, or McClintock from King William's Land.

On the return of the officer last named, Hall urged that the explorations made by him and his junior officers, Hobson and Young, though eminently successful, still left much of value to be secured; that they had been made, by necessity, in the month of May when the land was still covered with snow, and that interviews with the Eskimos had been found practicable with detached parties only. Hoping for further success in a more favorable season of the year, and believing that "as England had left the field of search, the Stars and Stripes should enter," he sailed from New London, Conn., in May,

1860, for the most favorable northwestern point he could reach in a whaler, from which point he would make his way westward with such Eskimo companions as he could secure. To the American Geographical Society he had avowed his chief object to be "to determine more satisfactorily the fate of the one hundred and five companions of Franklin known to be alive at the date of the 'Record' brought back by McClintock."

Nothing seems to prove more fully the sincerity and depth of convictions—at times insecurely based—than this expectation of finding officers or men of that party still alive. The paper found at Point Victory in 1859 showed that Captain Crozier had left the ships on their abandonment, with a weakened party and with the remnant of perhaps originally ill-supplied* provisions, to find his way toward the desolate region of Back's or Great Fish River. The presumption in the minds of most men was entirely against the probability of extended life in any one of the survivors named in that Record.

But all difficulties in the case were overcome or lost sight of in Hall's reasonings, and in his impulse to bear relief. From inquiries of the whalers who visited Cumberland Sound, Repulse Bay, and other northern localities, he learned that the experience of some who had lived for months *as* Eskimos with the Eskimos, had not been severe; and from one of Dr. Kane's party, Mr. William Hickey, he received assurance that when he and others of that party had so lived, they had recovered from all sicknesses and maintained their health. Hall concluded that some of Franklin's survivors might be still enjoying a lease

* See Sir John Richardson's "Polar Regions," p. 162; Admiral Sherard Osborn's "Career of Franklin," pp. 76, 105, 108; and D. Murray Smith's "Arctic Explorations," 1877, especially for the quality of Goldner's provisions. The want of pemmican itself, of which Osborn speaks, would make the support of Crozier's party almost hopeless, compelling them to drag loads too heavy for their strength.

of life among that not inhospitable people, and he hoped that by his going out and living patiently among them, he could draw out through faithful interpreters, the final clue to the fate of the ships, the men, and the records of the expedition Other reasonings leading him to believe that some of Franklin's party still survived were substantially these: that no Arctic explorer had ever understood better the necessities of a good supply of fresh provisions for his men than did Sir John Franklin, and that he made provision for such necessities. In proof of this, Hall had found in the official papers that a full complement of fresh provisions, preserved meats, soups, and vegetables, and ten live oxen were on board the Erebus and the Terror. Further, that Franklin had told Captain Martin, of the whaler Enterprise, when off the coast of Greenland, July 22, 1845, that he had provisions for five years, and, if necessary, could make them spin out seven; and he would lose no opportunity of killing game, having already organized shooting parties. There was every reason to believe, too, that animal life was found in abundance by his men on the shores of Wellington Channel, especially in the neighborhood of Baillie Hamilton Island, and that Franklin had sent hunting parties to great distances with sledges; for the tracks of these sledges were seen six years after by Kane, De Haven, and Ommaney and Osborn. Hall could say with truth that his expectations of rendering relief were based on years of careful study and examination of what had been written on this subject; and his appeal was plain and strong, "Why should not attempts be renewed again and again until all the facts are known?"

These and other references to the First Voyage are here made the more full, because, as has been already intimated, the same idea of

"rescue" is the key to the Second also, geographical discovery being but a subordinate motive. Hall's first voyage had been rewarded by discovery, and he was thus stimulated to return to the North. But up to the time of his preparations for the North Polar Expedition in 1870, there was probably no day in which his thoughts were not upon Franklin's men and King William's Land; and even then his expectation was to resume the search on his return from the Pole. For this problem only he declined Lady Franklin's proposal that he should go out a *third* time for the Records of the Expedition.

The following Letter on this subject, written on her receiving in 1869 a newspaper account of some of Hall's Arctic work, shows her impartial judgment and her confidence also in his character and plans. In this connection it will be remembered that Lady Franklin, after being compelled on McClintock's return to abandon the lingering hope of her husband's safety, still held her thoughts on the recovery of the Records as the clue to the history of his last years and as establishing the claim that he was the discoverer of the Northwest Passage. The inquiries which she here makes of Hall were answered by his letter of a later date, and are met in full by the statements in Chapter XIII of this Narrative.

[LETTER FROM LADY JANE FRANKLIN.]

UPPER GOVE LODGE

Kensington Gove,

Oct. 30*th* 69.

MY DEAR MR. GRINNELL,

I had not received M^r^ Hall's report when I wrote to you last by Denis, or I should have had much more to say to you. This I have delayed, however, because I felt it was a moment when your mind must be fully occupied not only with M^r^ Hall, but with the still nearer and more heartfelt business of overlooking all your dear son's relics and papers.—I wished also to hear the opinions of my Arctic friends on M^r^ Hall's report; but in this I have had but partial success, as at this season friends are dispersed, and very few at hand with whom details can be discussed.—My own impresssion is that M^r^ Hall has done his best with the means he had at his command; but his statement is full of omissions and so devoid of order and dates as to leave much confusion and perplexity in the mind. He makes no distinction between the places he visited himself, and what he saw himself—and what he only heard of. What are the places he really set foot on in K. W. Land and the dates on which he did so? Did he merely touch the Eastern shore, or did he go along the Southern coast by Cape Herschel, and visit the other places, where he says they finally perished? I presume he did not visit Montreal Island, but his assertion (derived no doubt from certain Esquimaux) is at variance with what other Esquimaux told D^r^ Rae and afterwards McClintock, and with the con-

clusions formed by Anderson, the Hudson Bay officer, previous to that period.

I am now supposing that two sets of Esquimaux gave contradictory evidence on this point, but I perceive it was the same man whose name was given by Mr Hall, who gave the contradictory information to the two parties.—Is this the case, or has Dr Rae misunderstood him or Hall?

Who was his authority for saying that the records are buried in a vault (that is, I suppose, a hole dug for the purpose) near Point Victory? Could the Esquimaux point out the exact spot, and, if so, can we believe they have not opened or rifled it? Was this question put to them?—and is there reason to suppose that these documents may exist in part in their possession?—Most people are of opinion that they took their journals with them on their march, and that even at the last extremity, they did not throw them away, but tried to hide them; and this may have taken place all along the march. It seems strange, if they were buried near Pt. Victory, that the Record found there and brought home by McClintock, did not notice this;—especially as it was well understood, I believe, among the officers, although not openly talked about (lest the information should be betrayed to the natives) that these documents were to be buried so many yards magnetic north of the cairns erected.—Again it is supposed, and I believe McClintock is of that opinion, that these vaults may be conjectural things, by which the Esquimaux explained some leveled or paved spot which had been the site of a magnetic Observatory or shooting station. Have the Esquimaux ever been asked if they found tin cylinders, or any other contrivance for holding nothing but a sheet of paper, under the cairns, and what they did with them, and whether they could procure any, if handsomely rewarded? If another search were instituted, it should be held out to them that the production of paper or books would be more handsomely rewarded than anything else.

Does not Mr Hall believe that, if the natives had found what he calls "the vault," they would have removed everything out of it; would he have given up the search had he felt convinced that anything was to

be gained by pursuing it?—This is a question that has been put to me; but I think M^r Hall had not the means of supporting himself in the barren island, and could get no one to accompany him, or not enough of men; and then the new idea of the North Pole took possession of him and seemed to him a more worthy object of ambition.—Yet, though he abandoned, whether from necessity or choice, the object he had held out to himself from the beginning, he is too conscientious to say that nothing more can be done, or that he did all that man can even do; and his declaration is, in my view of things, creditable to his candor and truthfulness; he almost invites others to do that in which he has failed himself,—and this leads me to ask (and many are asking the same question) whether anything would induce him to go again? and, if so, whether he would consent to accompany one of the bravest and ablest of our Arctic officers, as his Second.—

I would ask you to ascertain from him whether he would *postpone his efforts to reach the Pole*, for one season (he may be quite sure there is no danger of any body getting there before him) and devote a whole summer to the recovery of the precious documents on King William Island, and the several adjoining places on the main-land, where he believes the last of our poor people perished.

The emoluments or remuneration must be such as to make it worth his while to undertake another voyage, and should be suggested by himself, so that he might start with a willing mind and be able to see that his further movements northward would be facilitated rather than checked, by joining in this final Arctic search.—In fact, he and his two Esquimaux, if he takes them with him towards the Pole, would be so far forwarded on their way when the King W^m search was over. I do not enter at present into more detail, except that such an Expedition would be on a manageable but sufficient scale, composed of well-tried, trustworthy men, whether English, American, or Canadian, i. e. Hudson Bay people; and, that the funds are provided and are ample for the purpose. To apply again for Government aid seems totally out of the question. Such an appeal would not be listened to for a moment, and it is quite certain that whatever has been hitherto effected has been

by private means; viz, by your Expeditions on the one hand, and my humble efforts on the other.

What I have now said about engaging Mr. Hall in a last effort will show him that I judge of him as you do yourself; viz, that he is an able, fearless, trustworthy and conscientious man; Dear Cornelius always maintained that he was so. It remains to be seen whether in so holy and noble a cause as the rescue of those precious documents from eternal sepulture in oblivion, Mr Hall would be willing to forego the chief command, in order to act as a coadjutor with all that natural influence which his experience and zeal must give him; sharing the dangers of his companion and sharing his glory also.

Having said this much, I must add my request that the suggestions I now make through you to Mr Hall *be not made* public, nor *find* their way *into the newspapers*, as it is a part of the plan here in England to keep the contemplated Expedition a secret until fully determined on and organized, in order to avoid all obstruction, discussions and difficulty making.

I am most anxious to see Mr. Hall at this moment; how many difficulties could be cleared, how much increased confidence inspired, if one could but see and talk to him!—but how is this to be effected, for I suppose he is too busy with his book to come to England till the publisher's work is done;—otherwise I would gladly pay all his expenses to and from and during his stay here.

I am sorry to hear rumors of his having got into some trouble about the man whom he sacrificed. I presume he deemed it necessary, however, for the safety of himself and others. It is an awful thing to take a man's life, but it has been found justifiable upon occasions when the lives of others were endangered. Witness that act of Sir John Richardson's, which is always quoted to his honor, when, without a moment's warning, he shot down the half-breed hunter, who was advancing quickly in his strength toward himself and Hepburn, both enfeebled by starvation, in order to sacrifice and feed upon them.

Sir Leopold McClintock is home preparing a third edition, (which has been called for by his publishers) of the Fox Voyage. He thinks

himself most fortunate in anticipating the discovery by the Esquimaux of the traces, as he succeeded in doing in seven distinct localities in King William Land.—McClintock thinks the leading article in the Tribune gives a fair estimate of what he has done; in general, Hall's researches quite confirm those made by himself. I have come to the end of my second sheet, and dare not take a third.

Your faithful & affectionate friend

JANE FRANKLIN

REPLY.

[*Confidential*, with the exception that Lady Franklin can be informed of the substance of the letter.—C. F. H.]

CINCINNATI, *Dec^r* 14^th^ 1869.

Mr. GRINNELL

DEAR SIR:

Time and *again* have I taken in hand the subject matter of Lady Franklin's Letter, for the object of giving full answer to it; but in vain. I can say in truth that ever since my arrival in the country from my return from my late five years voyage and travels in the Arctic Regions, I have not had two hours to myself in which I could sit down and not be interrupted many times. I despair, at present, of getting the time to answer (as I would like) the letter referred to; for I am busily flying here and there on Lecture tours. Lecturing is a curse to my soul, for I am far from being that way inclined, and yet I have had to pursue it and am still head and ears engaged in it. Just as soon as I can get out of the uncongenial business, I shall do so; and then I do hope I can get at least sufficient time to apologize to you and other friends for the apparent long neglect.

This much I must say, that, for years, I have determined to undertake an Expedition to the North Pole so soon as I should become satisfied that there could be no survivor of Sir John Franklin's Expedition. I expect soon to apply to Congress for aid in my purposed North Pole Expedition. In case of not securing the necessary aid from Congress or otherwise for that Expedition (to commence next spring,) I should then feel to do whatever I could to favor personally the noble aspirations of Lady Franklin: parenthetically let it be said, that no one should ask of me to accept a subordinate position in an Arctic Expedition. If McClintock and myself be Lady Franklin's chosen ones, we could be Co-Commanders and nothing less.

As for pay I should ask nothing. My faithful Frank Lailer, I know, would be glad to accompany us. He will go wherever I desire, and certainly I will feel glad to have him with me whenever I may go to the Arctic Regions. Joe and Hannah, my Esquimaux Interpreters, I think, would accompany us also. They send love to you & family.

Yours ever

C. F. HALL.

P. S. Whether I go or not on the proposed English Expedition to King W^m^'s Land, I feel to do all I can in facilitating its purposes; and will, therefore, communicate such important matter as I have acquired in the North, so soon as I can be relieved from the pressure upon my time.

The promise involved in the last of the preceding lines was fulfilled at as early a date as was found practicable. On the 10th of January, 1871, he forwarded to Lady Franklin two MSS., titled "Sir John Franklin, with notes of my voyage of 1864 to '69." The extracts which follow from letters accompanying this packet, will confirm what has been said as to his desire to go out even a *third* time for the Records:

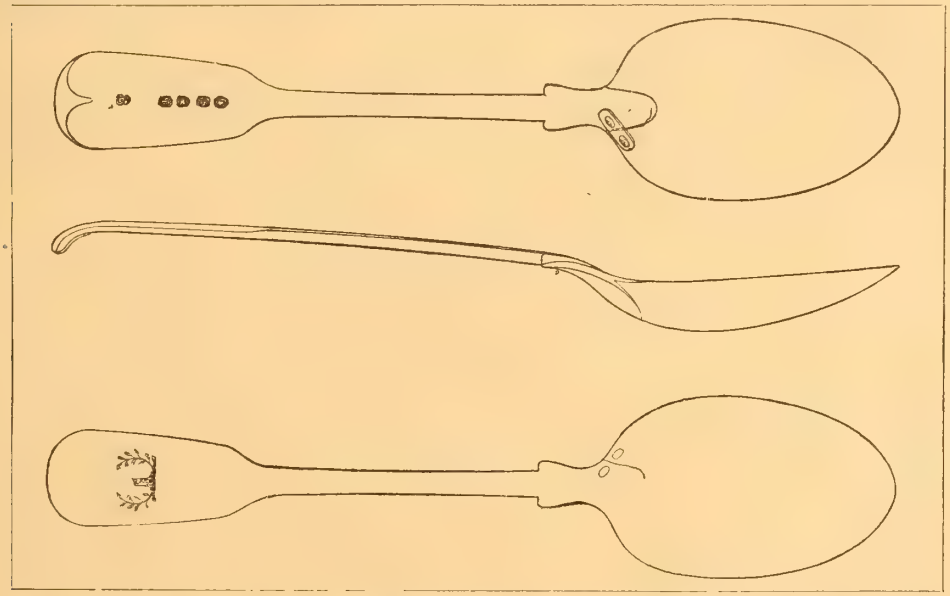
* * * My special respects to Miss Cracroft. I trust I shall be able to send you other matter relating to my King William's Land Sledge Journey, and such information as will be of use to any one who may make a Journey to King W. Land. * * * Why is it that I am not still following up that subject? Is it finished? Can more be done in gaining intelligence of that most important of all Arctic Expeditions? To the first question the answer cannot be satisfactory, for I hardly know, myself, why I was led off from that almost holy mission to which I have devoted about twelve years of my life, and well on to eight of these in the icy regions of the North. What burned within my soul like a living fire all the time, was the full faith that I should find some survivors of Sir John's memorable Expedition living among the natives, and that I would be the instrument in the hand of heaven, of their salvation. But when I heard the sad tale from living witnesses in the spring of 1869, how wickedly many survivors in the fall of 1848 had been abandoned and suffered to die, my faith, till then so strong, was shaken, and ultimately was extinguished. As to the Records, I believed they had been carefully buried on King William's Land before the Erebus and Terror were abandoned; and, that if no survivor was found, at least those Records might be recovered.

* * * God willing, I will make two more voyages to the North,—one for

the discovery of the regions to and about the Pole, and the *other to obtain the records of Sir John's Expedition*, and to obtain other information than what I already possess relating to it. Had I failed in getting my Country interested in fitting out an Expedition for making Polar discoveries, as I told you *I would have most certainly (D. V.) been ready for the King Wm's Land Voyage.* As the matter now stands, I have much reason to hope that the North Polar Expedition I have the honor to command, will accomplish its object and be back to the States in 30 months from the time of leaving say from 1st of June next.*

* The search for the Records has not been wholly abandoned even at this late date. The cruises of the Pandora (now the Jeanette, of the Polar Expedition of 1879, under command of Lieutenant De Long, U. S. N.) made by Capt. Allen Young in 1875 and 1876 had this search for one of their objects.

June 19, 1878, an expedition under Lieutenant Schwatka, U. S. A., was sent out from New York by Morison & Brown for the same object. This expedition proposed to remain on the field of search later in the summer following than Hall found himself able to do in 1869. Taking with them Eskimo Joe as guide and interpreter, and a force of armed white men, they may possibly secure something of value of those Records, the recovery of which has been so long desired by England and by the world. Captain Barry, who took out Lieutenant Schwatka in the Eothen, had received on a previous voyage information from the Neitchille natives which prompted the present expedition. He had brought home with him also a Franklin relic, the history of which is marked under the annexed drawing. Messrs. Morison & Brown presented it to Miss Cracroft, through the U. S. Naval Observatory.



SPOON BELONGING TO SIR JOHN FRANKLIN, BROUGHT FROM REPULSE BAY BY CAPT. BARRY, OF THE WHALER A. HOUGHTON, IN 1877, FORWARDED TO MISS SOPHIA CRACROFT, LONDON. THE MENDING DONE BY THE ESQUIMAUX.

Full evidence is thus found in Hall's papers, especially in that private correspondence which best discloses impulses and purposes, that his "Rescue and Research" was the impulse not of a humane feeling only, but of such feeling exercised towards those whom he considered heroes in their objects as well as in their sufferings. It grew out of his thoughts of men who had been fighting nature for objects which had enlisted very noble minds;—enticing from his home a Franklin for the fourth time, and even in his sixtieth year. Hall's own desire for participation in the work of search was quickened by the fact that every Relief Expedition except McClintock's had erred in its line of search, until "the pursuit was now ended," as John Barrow and others wrote him, "where it should have been begun." It does not seem so strange, then, that he should at times have spoken of himself as "called" to do something in the work of relief on which no one else was entering.

To go back to his first appeal, issued for him to the citizens of Cincinnati in 1860, is to cite what in one form or another disclosed his feelings throughout the whole remainder of his life.

The appeal read as follows:

THIS IS TO MEMORIALIZE all lovers of Man and of Geography, History, and Science to co-operate by all methods and means in their power, to facilitate and assist our fellow countryman, Charles Francis Hall of Cincinnati, Ohio, in the formation of, and fitting out an American Expedition, in search of survivors of Sir John Franklin's Exploring party, consisting of 138 persons, only 27 of whom are known to be dead. Secondly, for satisfactorily settling and completing the history of the last Franklin Expedition; and thirdly, to promote and benefit the cause of Geography, Navigation, Natural History and Science.

Such an Expedition with proper vessels, with competent and experienced Commander, Officers and Crew, with a complete outfit and provision for from two to three years cruise, to embark from an Eastern port of the United States of America, and proceed via. Davis Straits, Baffin's Bay, Lancaster Sound, and Barrows Strait; thence from the North coast of Boothia to commence the Search, extending it to King William's Land, and the adjacent regions, until a thorough and satisfactory investigation shall have been made of all that portion of the Arctic World; and the humanitarian object attained of discovering some survivor of the lost companions of Sir John Franklin, or of ascertaining the ultimate fate of the Members of that Expedition, who, up to this day remain unaccounted for; being no less than one hundred and eleven souls, whose history, the loud voice of mankind, from all generous natures, demands shall not remain forever shrouded in oblivion, while energetic intelligence and American enterprise can hope to rescue a single survivor, or furnish the solution of their ultimate history.

This appeal was indorsed by a number of the public men of Ohio, among whom were Hon. R. B. Hayes, the present Executive of the United States; the Governor of the State, Hon. William Dennison; Hon. S. P. Chase; and the Mayor of Cincinnati, now Gov. R. M. Bishop. At the meeting which it secured, Hall exhibited maps and charts of the Arctic discoveries made by Sir John Franklin, Dr. Kane, De Haven, and McClintock; with those of Ross, Parry, Back, Dease and Simpson, Richardson, Rae, McClure, Kellet, Collinson, Belcher, and others—names which carry us back to the revival, under Sir John Barrow, of English exploration for the Northwest Passage to Asia. The study of such explorations from even a much *earlier* date had made Hall intelligent in this field; it now maintained his enthusiasm.

As introductory, therefore, to the history of his purposes, and of his work in this Second Expedition, some Tabular Statements and historical Maps have been prepared, in order to present, in connection with the now renewed public interest in Arctic Exploration,

The Record in brief;—

I. Of English and American* explorations for the Northwest Passage from the year 1818 to 1845, when Sir John Franklin's Expedition left England.

II. Of the Franklin Relief Expeditions, English and American, from 1848 to 1860, the year of Hall's First Expedition.

TABLE No. I.

1. *Naval expeditions for discovering the Northwest Passage,* 1818 *to* 1845.

Commanders.	Vessels.	Positions reached north and west.	Year.
I. Capt. D. Buchan Lieut. John Franklin	Dorothea Trent	Long. 11° W.; lat. 80° 37′ N.	1818
II. Commander John Ross Lieut. W. E. Parry	Isabella Alexander	Lancaster Sound; long. 84 W.; lat. 76° 54′ N.	1818–'19
III. Lieut. W. E. Parry Lieut. M. Liddon	Hecla Griper	West coast of Melville Island; long. 113° 48′ 22″ W.; lat. 74° 47′ 19″ N.	1819–'20
IV. Capt. W. E. Parry Capt. G. F. Lyon	Fury Hecla	Whyte Inlet, Fury and Hecla Strait; long. 84° 52′ W.; lat. 70° 12′ N.	1821–'23
V. Capt. W. E. Parry Commander H. P. Hoppner	Hecla Fury	Prince Regent's Inlet; long. 92′ 18′ W.; lat. 74° 28′ 13″ N.	1824–'25
VI. Capt. G. F. Lyon	Griper	Rowe's Welcome; long. 89° 1′ 44″ W.; lat. 65° 20′ N.	1824
VII. Capt. F. W. Beechy	Blossom	Bering's Straits to Point Barrow, 126 miles east of Icy Cape.	1825–'28
VIII. Capt. John Ross Lieut. James C. Ross	Victory	West coast of Prince Regent's Inlet and of Boothia and north coast of King William's Land; long. 99° W.; lat. 70° 5′ 17″ N.	1829–'33
IX. Capt. George Back	Terror	Frozen Strait; long. 83° 40′ W.; lat. 65° 47′ N.	1836–'37

* For some curious notices of *American* voyages for the Passage, made in 1753, 1754, 1772, and possibly as early as 1639, see the close of this chapter.

Chart of Part of the
ARCTIC REGIONS
as known in
1845.
being a copy of the Chart supplied to the
Franklin Expedition.

[FROM "THE N W PASSAGE AND THE SEARCH FOR SIR JOHN FRANKLIN" J BROWN, LONDON, 1860]

...GE AND THE SEARCH FOR SIR JOHN FRANKLIN." J BROWN, LONDON, 1860]

(2.) EXPLORATIONS BY LAND.

1819–1822.—Capt. John Franklin, with Dr. J. Richardson, Lieutenants Back and Hood; land journey from York Factory, west side of Hudson's Bay, to the Coppermine River, and from its mouth east to Point Turnagain, lat. 68° 19′ N., long. 109° 25′, a distance of 550 miles. Whole journey 5,500 miles (see for this route Circumpolar Pocket Map).

1825-1827.—Sir J. Franklin explored the coast from the mouth of Mackenzie's River westward to Return Reef, long. 148° 52′, lat. 70° 26′ N.; Dr. Richardson, of the same expedition, coasting from the mouth of the Mackenzie east to the mouth of the Coppermine. (Pocket Map.)

1833.—Capt. George Back, in search of Sir John Ross, discovered the Great Fish River, descended it, and explored the coast eastwardly as far as long. 94° 58′ W., lat. 68° 13′ N.

1837–1839.—Messrs. Dease and Simpson, in the service of the Hudson Bay Company, explored the coast from Mackenzie River westward to Point Barrow, and eastward from the Coppermine to Castor and Pollux River, long. 93° 7′ W. This exploration supplemented Beechey's, Franklin's, and Richardson's coastings, and thus completed the examination of the coast line from Bering's Strait to long. 93° 7′ W.

What *remained*, therefore, in the problem of the Northwest Passage was to connect Parry's furthest Westing of 113° 48′ 22″, made in 1819, either with Bering's Strait or southward with Simpson's Strait. To seek the passage westward to Bering's Strait from Melville Island seemed to the Admiralty at that day a loss of time in consequence of the unusual magnitude and apparently fixed state of the ice which had been observed by Parry off Cape Dundas.

But of the western entrance to Simpson's Strait, Sir John Franklin was accustomed to say, "If I could only get down there my work is done; it is all plain sailing to the westward." In this buoyant hope he left England May 19, 1845, commanding the last expedition which

has had the discovery of the Northwest Passage as its direct object His latest dispatch was dated, "Whale Fish Islands, west Coast of Greenland, July 12, 1845." His ships were last seen July 26, of that year, by the whaler Prince of Wales—moored to an iceberg, lat. 74° 48′ N., long. 66° 13′ W.

THE EXPEDITION.

Officers.	Vessels.	Positions reached North and West.	Year.
Capt. Sir J. Franklin, Commander J. Fitzjames, Lieut. G. Gore. Capt. F. R. M. Crozier, Lieut. E. Little.	Erebus, 370 tons, screw. Terror, 340 tons, screw.	I. Up Wellington Channel, 150 miles, to lat. 77° N., long. 99° W. II. Wintered at Beechey Island, lat. 74° 43′ 28″ N., long. 91° 39′ W. III. Thence west, and probably through Peel Sound, to lat. 70° 05′ N., long. 98° 23′ W., where the ships were abandoned April 22, 1848; one of them drifting south.	1845 to 1848

No tidings having been received from Franklin at the close of nearly three years, Relief expeditions began to be sent out from England. The chief of these are stated in the following tables. The lines of search and the chief localities examined in the hope of finding the lost expedition may be traced on Circumpolar Map No. I. (Pocket.) The tables have been arranged to show that the search for Franklin was carried on by expeditions which, within about the same periods, visited the Northern coasts, some from Bering Straits and others from Baffin's Bay;—supplemented by land explorations chiefly along the middle section of the Continent. The Private Expeditions closed the search (Table 4) by McClintock's voyage of the Fox.

John Franklin

Bureau, Engraving & Printing.

TABLE No. II.

English and American Expeditions for the Relief of Sir John Franklin, 1848–1859.

1. FROM THE WEST THROUGH BERING'S STRAITS.

Years.	Vessels.	Commanders.	Line of search and coasts examined.
1848–'52	Plover	Commander Moore Captain Maguire	Through Bering's Strait, beyond Point Barrow, to lat. 73° 51′ N., long. 163° 48′ W., with a boat expedition from the Plover up the Mackenzie River and east to Cape Bathurst; Mr. R. Sheddon, in his yacht "Nancy Dawson," rendering assistance.
1848–'49	Herald	Captain Kellett	Discovered Herald Island, and visited and named a part of the land reported by Wrangell.
1850–'55	Enterprise Investigator	Captain Collinson Commander McClure	Coast of North America from Bering's Strait to Dease Strait and coast of Banks Land. Investigator abandoned June 3, 1853, in the bay of Mercy on the north coast of Banks Land. Commander McClure crossed on the ice to Dealy Island to the Resolute and Intrepid, and returned across the Atlantic to England. Parliament gave £10,000 to him and his officers.
	Supply-ships:		
1851–'52	Dœdalus	Captain Wellesley	
1853	Amphitrite	Captain Frederick	
1853	Rattlesnake	Commander Trollope	
1853	Diligence	Lieutenant Elliott	
1854	Trincomalee	Captain Houston	

2. FROM THE EAST THROUGH BAFFIN'S BAY.

Years.	Vessels.	Commanders.	Line of search and coasts examined.
1848–'49	Enterprise	Sir J. C. Ross	North and west coasts of North Somerset. North shores of Barrow Strait and the shores of Prince Regent's Inlet.
	Investigator	Captain Bird	
1849–'50	North Star (Supply ship.)	Master Saunders	Landed provisions on one of the Wollaston Islands.
1850–'51	Lady Franklin	Captain Penny	Coasts of Cornwallis Island and shores of Wellington Channel.
	Sophia	Captain Stewart	
1850–'51	Resolute	Captain Austin	South coasts of the Parry Islands and the passages between them, northwest and east coasts of Prince of Wales Island to long. 103° W., lat. 72° N.
	Assistance	Captain Ommaney	
	Pioneer	Lieutenant Osborn	
	Intrepid	Lieutenant Cator	
1850–'51	Advance	Lieutenant De Haven, U. S. N.	First Grinnell Expedition; shores of Wellington Channel; discovered Grinnell Land.
	Rescue	Master Griffin, U. S. N.	
1852–'54	Assistance	Sir E. Belcher	Shores of Wellington Channel and the coasts of Melville and Prince Patrick Islands; the Assistance, Resolute, Pioneer, and Intrepid abandoned August 26, 1854; the Resolute picked up at sea, lat. 64° 40′, long. 61° 30′, September 11, 1855, by Capt. James Buddington, of New London, Conn.; brought to the United States, and presented to England by joint resolution of United States Congress of August 28, 1856; delivered to Queen Victoria by Commander Hartstene, U. S. N., December 16 of same year.
	Resolute	Captain Kellett	
	Pioneer	Lieutenant Osborn	
	Intrepid	Lieutenant McClintock	
	North Star	Captain Pullen	

Years.	Vessels.	Commanders.	Line of search and coasts examined.
1853	Phœnix Breadalbane	Commander Inglefield Lieutenant Fawckner	Shores of Wellington Channel; landed stores at Cape Riley; returned with part of McClure's command; Lieutenant Bellot, of France, perished in the ice August 17, 1853; the ship lost at Cape Riley August 21, 1853.
1853–'55	Advance	Dr. Kane, U. S. N	Second Grinnell Expedition, Smith's Sound. Lat. 82°27′ N.
1854	Phœnix Talbot	Commander Inglefield Commander Jenkins	Returned to England from Beechey Island with part of Belcher's and McClure's commands.
1855	Release Arctic	Lieutenant Hartstene, U. S. N. Lieutenant Simms, U. S. N	Ships sent out for the relief of Dr. Kane; found him on his return at Lievely or Godhavn, Greenland.

(3) LAND EXPEDITIONS.

1848–'49.—Sir John Richardson and Dr. Rae searched the coasts of North America between the Mackenzie and the Coppermine Rivers.

(Dr. Rae, under the Hudson Bay Company in 1846–'47, made a voyage of discovery from Fort Churchill to the Gulf of Boothia, surveying the Gulf to Fury and Hecla Strait on the east and Lord Mayor's Bay of Sir James Ross on the west, determining there an isthmus.)

1849.—Dr. Rae reached Cape Krusenstern.

1849–'51.—Lieut. W. J. S. Pullen, from the Plover. (See table No. II for Boat Expedition.)

1851.—Dr. Rae: coasts of Wollaston Island and east coast of Victoria Land to lat. 70° N., long. 101° W.

1853–'54.—Dr. Rae: coasts of Boothia Isthmus; obtained relics of Franklin's Expedition (rewarded by vote of Parliament).

1855.—J. Anderson and J. G. Stewart: west coast of Adelaide Peninsula.

(4.) PRIVATE EXPEDITIONS ORGANIZED UNDER SUBSCRIPTIONS BY SOCIETIES, BY LADY FRANKLIN, CAPTAIN ROSS, LIEUTENANTS McCLINTOCK, YOUNG, AND OTHERS.

Years.	Vessels.	Commanders.	Line of search and coasts examined.
1850–'51	Felix Mary	Sir John Ross Commander Phillips	A portion of Cornwallis Island. [Dr. R. A. Goodsir, brother of the surgeon of the Erebus, in the whaler Advice, in 1849, also searched Baffin's Bay and Lancaster Sound.]
1850	Prince Albert	Commander Forsyth	Found Barrow Strait and Prince Regent's Inlet blocked with ice; coasts of Prince of Wales Island and North Somerset.
1851–'52	Prince Albert	Captain Kennedy Lieutenant Bellot	Shores of Prince Regent's Inlet and Bellot Straits. Lieutenant Bellot, of France, was second in command.
1852	Isabel	Commander Inglefield	Wostenholme, Whale, Smith's, Jones, and Lancaster Sounds, and Baffin's Bay. [Captain Kennedy, in 1853, sailed in the Isabel for Berings Straits; voyage abandoned at Valparaiso.]
1857–'59	Fox	Captain McClintock	Completed survey of North Somerset, Prince of Wales Island, Boothia-Felix Peninsula, and King William's Land, finding many relics of Franklin's Expedition, and obtaining at Point Victory the only Record as yet recovered.

This last expedition, under McClintock, brought from the cairn at Point Victory, on King William's Land, a tin cylinder containing the

SKETCH MAP OF THE ARCTIC REGIONS, AT THE TIME OF FRANKLIN'S LAST EXPEDITION & OF HIS SUPPOSED TRACK.

[FROM ADMIRAL Mc CLINTOCK'S, FATE OF FRANKLIN."]

Consul at the nearest Port.

QUINCONQUE trouvera ce papier est prié d'y marquer le tems et lieu ou il l'aura trouvé, et de le faire parvenir au plutot au Secretaire de l'Amirauté Britannique à Londres.

CUALQUIERA que hallare este Papel, se le suplica de enviarlo al Secretario del Almirantazgo, en Londrés, con una nota del tiempo y del lugar en donde se halló.

EEN ieder die dit Papier mogt vinden, wordt hiermede verzogt, om hezelve, ten spoedigste, te willen zenden aan den Heer Minister van de Marine der Nederlanden in 's Gravenhage, of wel aan den Secretaris der Britsche Admiraliteit, te London, en daar by te voegen eene Nota, inhoudende de tyd en de plaats alwaar dit Papier is gevonden geworden.

FINDEREN af dette Papiir ombedes, naar Leilighed gives, at sende samme til Admiralitets Secretairen i London, eller nœrmeste Embedsmand i Danmark, Norge, eller Sverrig. Tiden og Stœdit hvor dette er fundet önskes venskabeligt paategnet.

WER diesen Zettel findet, wird hier-durch ersucht denselben an den Secretair des Admiralitets in London einzusenden, mit gefälliger angabe an welchen ort und zu welcher zeit er gefundet worden ist.

Party consisting of 2 Officers and 6 Men left the Ships on Monday 24th May 1847

G. M. Gore Lieut

Chas F. Des Vœux Mate

London. John Murray. Albemarle Street 1869.

[From Sir Leopold McClintock's "Fate of Franklin."]

H. M. S. Erebus and Terror

Wintered in the Ice in

28 of May 184 } Lat. } 0° 5' N Long. 98° 23' W

Having wintered in 1846 — 7 at Beechey Island

in Lat } 74° 43' 28" N Long 91° 39' 15" W after having

ascended Wellington Channel to Lat 77° and returned

by the West side of Cornwallis Island

Commander.

Sir John Franklin commanding the Expedition

All well

WHOEVER finds this paper is requested to forward it to the Secretary of the Admiralty, London, *with a note of the time and place at which it was found:* or, if more convenient, to deliver it for that purpose to the British Consul at the nearest Port.

Record, of which a *fac simile* is here given. It is the only official paper as yet found recording the fate of the Franklin Expedition.*

CHIEF BENEFICIAL RESULTS.

The explorations for the discovery of the Northwest Passage, and those sent out for the relief of Sir John Franklin or other absent explorers, resulted in the discovery of that great region lying within the Arctic Circle between 60° and 130° west longitude up to Cape Parry, 71° 23′ west longitude and 77° 6′ north latitude; or from Davis Strait to Cape Bathurst; embracing Banks, Prince Albert, and Prince Patrick's Lands, Melville Island and Sound, McClintock's Channel, Bathurst Island, Victoria, Prince of Wales and King William's Land, Boothia and Gulf of Boothia, North Somerset, North Devon, Melville Peninsula, Cockburn Island, Grinnell, Ellesmere, and Washington Lands, Lancaster, Eclipse, and Jones

* In 1859 McClintock learned that the ships made the passage to the waters leading into Simpson's Strait. Franklin's expedition, therefore, discovered what he sought. He had died on board the Erebus June 11, 1847.

The Royal Geographical Society, in awarding in 1860 the Founder's gold medal to Lady Franklin, affirmed that in placing the Erebus and the Terror in the position of lat. 70° 05′, long 98° 23′, "the Franklin Expedition had firmly established the existence of a Northwest Passage." Lieutenant Gore's party, sent out by Franklin from his ship May 24, 1847, had, in fact, in all probability, reported to him before his death that the waters of the North and the South were united by a passage between his ships and Dease and Simpson's Strait. The discovery was unknown until the return of the Fox, six years after the award to Sir R. McClure and his officers, as the first to cross from the Pacific to the Atlantic.

A Monument costing £2,000, erected in 1860 in Waterloo Place, bears the inscription:

FRANKLIN.

TO THE GREAT NAVIGATOR

AND HIS BRAVE COMPANIONS

WHO SACRIFICED THEIR LIVES

COMPLETING THE DISCOVERY OF

THE NORTH-WEST PASSAGE.

A. D. 1847–48.

ERECTED BY THE UNANIMOUS VOTE

OF PARLIAMENT.

This statue, voted by the nation, was unveiled in the presence of the First Lord of the Admiralty, Sir J. Pakington, and of the distinguished Arctic explorers and geographers, Collinsin, Ommaney, Sabine, Murchison, Osborn, and Rawlinson, Mr. John Barrow, Mr. Arrowsmith, and of others, with Lady Franklin. She declared the likeness of her husband excellent and

Sounds, Wellington Channel, Kellett, Barrow Straits, Franklin Straits, Peel, Sir James Ross, and the Fury and Hecla Straits, Regent's Inlet, and the discovery in 1833, by Sir James Ross, of the north magnetic pole. (Judge Daly, pres. of Am. Geog. Soc., in Johnston's Cyclopedia, 1876.) See Circumpolar Pocket Map and Map No. II.

In a very courteous letter received since the preparation of this Narrative was begun, Admiral Sir F. L McClintock, R. N., estimates the aggregate amount of moneys expended by England in these Northwest Passage explorations at £272,000, and of those expended in the relief expeditions, at £675,000; with the additions made by private parties of £35,000. Of this last sum a large proportion was from Lady Franklin's purse.

The aggregate of moneys expended by American exploring and relief expeditions, chiefly from private subscriptions, exceeds the sum of $250,000. The amount appropriated by the United States Congress for Dr. Kane's Expedition was $150,000.

Admiral McClintock further writes that the number of miles traversed by sledge expeditions only, over ice or land, is about 43,000.

In answer to the request that he would express his views in regard

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characteristic. He is represented as informing his officers and crew that the Northwest Passage has been discovered. A panel represents Crozier reading the funeral service over Franklin in 1847.

In 1875 a beautiful Monument, ordered by Lady Franklin, was inspected before her death, and placed in the same year in Westminster Abbey. It is of Carrara marble, having in bas relief an ice-bound ship, and the inscription:

"O ye frost, and cold! O ye ice and snow,
Bless ye the Lord!

Followed by Tennyson's lines:

Not here: the white North has thy bones, and thou
Heroic Sailor Soul!
Art passing on thy happier voyage now
Toward no Earthly Pole.

Erected by his widow, who, after long waiting, and sending many in search of him, herself departed to find him in the realms of life."

to the gain to commerce, to science, or to naval impulse by England's work for the Northwest Passage and the Relief expeditions, he says:

> This doubtless has been very great; to whaling commerce it has opened up all to the north and west of Davis Strait and Hudson Strait; also to the north of Behring's Strait. The value of these fisheries alone amounts to very many millions sterling into the pockets of English and American traders. The scientific results are very varied and ample in almost every department, and peculiarly so in magnetism, meteorology, the tides, geographical discoveries, geology, botany, and zoology, as shown by the general advance in each branch. Upon naval impulse the influence has been truly great; we could man an expedition with English naval officers; and abroad we have seen Germans, Austrians, Swedes, Norwegians, and this year Dutchmen, induced to take part in the work of Arctic exploration.

The problem of the Northwest Passage is no longer one of practical utility. Science has ceased to expect from its discovery the advantages for commerce and navigation the hope of which stimulated the explorers. The northeast passage around Asia, successfully prosecuted in the years 1878–'79, by Professor Nordenskiold, promises large rewards in the interests of science and of commerce. The cereals, the graphite, ivory, and other products of the Asiatic Arctic seaboard are already coming into the European markets. Lieutenant Payer, of the German North Polar Expedition of 1869, has justly said of the whole Polar question that "as a problem of science it aims at determining limits of land and water, at perfecting that network of lines with which comparative science seeks to surround our planet even to the Pole, the discovery of the physical laws which regulate climates, the currents of the atmosphere and the sea, and the analogies of geology with the earth as we see it."

The language of Sir John Barrow, Secretary of the Admiralty, whose labors were the means of reviving the explorations towards the north and west, is worth recalling:

But it may be asked, *cui bono* are these northern voyages undertaken? If they were merely to be prosecuted for the sake of making a passage from England to China, and for no other purpose, their utility might fairly be questioned. But when the acquisition of knowledge is the groundwork of all the instructions under which they are sent forth; when the commanding officer is directed to cause constant observations to be made for the advancement of every branch of science—astronomy, navigation, hydrography, meteorology, including electricity and magnetism, and to make collections of subjects of natural history—in short, to lose no opportunity of acquiring new and important information and discovery; and when it is considered that these voyages give employment to officers and men in time of peace, and produce officers and men not to be surpassed, perhaps not equaled, in any other branch of the service; the question *cui bono* is readily answered in the words of Queen Elizabeth's minister, "Knowledge is power."

At a meeting of the Royal Geographical Society, in 1865, Capt. Sherard Osborn said:

In the year 1818 Baffin's discoveries upon the one hand, and those of Bering upon the other, with dots for the mouths of the Mackenzie and Hearne Rivers, were all we knew of the strange labyrinth of lands and waters now accurately delineated upon our charts of the Arctic zone. Sailors and travelers, in thirty-six years, have accomplished all this; not always, be it remembered, in well-stored ships, sailing rapidly from point to point, but for the most part by patiently toiling on foot, or coasting in open boats round every bay and fiord. Sir Leopold McClintock tells the Royal Dublin Society that he estimates the foot explorations accomplished in the search for Franklin alone at about forty thousand miles. Yet during those thirty-six years of glorious enterprise by ship, by boat, and by sledge, England only fairly lost one expedition and 128 souls out of forty-two successive expeditions, and has never lost a sledge party out of about one hundred that have toiled within the Arctic Circle. Show me upon the globe's surface an equal amount of geographical discovery, or in history as arduous an achievement, with a smaller amount of human sacrifice, and then I will concede that Arctic exploraration has entailed more than its due proportion of suffering.

Those who assert that our labors and researches have merely added so many miles of unprofitable coast-line to our charts had better compare our knowledge of Arctic phenomena to-day with the theories enunciated by men of learning and repute a century ago. They should confront our knowledge of 1864 with that of 1800 upon the natural history, meteorology, climate, and winds of the Arctic Regions. They must remember that it was there we obtained the clue, still unraveled, of the laws of those mysterious currents which flow through the wastes of the ocean like two mighty rivers—the Gulf Stream and the Ice Stream; must remember that it was there—in Boothia—that the two Rosses first reached the Magnetic Pole, that mysterious point round which revolves the mariner's compass over one-half of the Northern hemisphere; and let the world say whether the mass of observations collected by our explorers on all sides of that Magnetic Pole have added nothing to the knowledge of the laws of magnetic declination and dip. They should remember how a few years ago it was gravely debated whether man could exist through the rigors and darkness of a Polar winter, and how we have only recently discovered that Providence has peopled that region to the extreme latitude yet reached, and that the animals upon which they subsist are there likewise, in winter as well as in summer. All this, and much more, should be borne in mind by those cynics who would have you believe we have toiled in vain; and I hold, with the late Admiral Beechey, "that every voyage to the North has tended to remove that veil of obscurity which previously hung over the geography and all the phenomena of the Arctic Regions. Before those voyages all was darkness and terror, all beyond the North Cape a blank; but, since then, each successive voyage has swept away some gloomy superstition, has brought to light some new phenomenon, and tended to the advancement of human knowledge.

At one of the meetings of the American Geographical Society, of New York, Mr. Henry Grinnell replied to questions of like character by stating some of the results in the extension of commerce and trade which have flowed from Arctic researches:

1. Sir H. GILBERT'S discovery of the cod-fisheries of Newfoundland.
2. From DAVIS' discoveries, the great whale-fisheries of West Greenland.
3. From the discoveries of HUDSON (who also discovered and sailed into our North River, which now bears his name, while on an Arctic voyage), Hudson's Bay, and the operations of the great fur companies.

4. Sir JOHN ROSS: the whale-fishery of the North, and northwest of Baffin's Bay.*

5. Captain PARRY: whale-fishery of Lancaster Sound, Barrow Strait, and Prince Regent's Inlet.

6. Admiral BEECHEY: whale-fishery of Bering's Straits, in which in the space of two years the whalers of Nantucket and New Bedford obtained cargoes from which it is said they have realized eight millions of dollars.

To these statements of results may be added with interest the fact that the loss of life has been remarkably small. The number of deaths occurring on board of all the ships of all the public and private expeditions sent for the relief of Franklin and on those engaged in later Arctic explorations up to the year 1873 has not exceeded one and seven-tenths per cent. of the officers and men employed. At the meeting of the Royal Geographical Society in 1865, Lieutenant Maury remarked that the wreck-charts of the British Isles for the previous year showed greater loss than did the forty years of Arctic exploration, 1819–'59.

The accompanying map, No. II, shows the unexplored regions at the date of 1818, geographical discoveries subsequent to that date being inclosed within the red lines. Circumpolar Map No. I (to be found in the pocket of the volume) has been prepared to show the chief localities visited by the officers named in the preceding tables. A few

*On the map accompanying Hon. Daines Barrington's "Possibility of Approaching the North Pole," published in London in 1818, "Baffin's Bay" will be found to have upon it the words "according to the relation of W. Baffin in 1616, but *not now believed.*" The facts of this case are that Purchas unpardonably omitted publishing the map brought back by the truthful old navigator, saying that "the Tables of his Journal and sayling were too costly to insert." As the consequence of thus discrediting Baffin, no whaler ever visited the "North Water" of his bay for two hundred years. The Dutch opened a whale-fishery in Davis Strait in 1719, making net profits during the period of 1719–1778 of nearly £900,000.

In 1818 Capt. John Ross found Baffin's relations to be accurate and his skeleton chart the safe guide of a worthy and able navigator. Ross found the whales large, numerous, and easily approached. He reported that the fisheries might be pursued with great success. This was the fruit of the first expedition for the Northwest Passage.

MAP OF THE ARCTIC REGIONS.

London Published as the Act directs by Jno. Murray, Albemarle Street 20th Oct.r 1818.

J. Walker Sculpt.

Circumpolar Map No. II (Geographical Discoveries made since 1818 in Red.)

other localities and names have also been marked on the Eastern and the Western hemispheres, and the Northern Asiatic coast-line is noted as corrected by Nordenskiold, 1878–'79.

EARLY AMERICAN VOYAGES FOR THE NORTHWEST PASSAGE.

It is of interest to note at what early dates in our colonial history citizens of Pennsylvania, New York, and Virginia shared in these explorations. The following letter from Dr. Franklin is in proof. The original was presented by Hon. George Bancroft to Mr. Grinnell. Mr. Bancroft refers to it in his History of the United States, vol. iv, p. 141. The extracts which follow the letter have been taken from the files of "The Pennsylvania Gazette, found in the Mercantile Library, Philadelphia. The letter of William Allen is from the Penn Papers of the Pennsylvania Historical Society.

PHILADELPHIA *Feb*^{y} 28th, 1753.

* * * I believe I have not before told you, that I have provided a subscription here of £1.500 to fit out a vessel in search of a North West passage. She sails in a few days, and is called the Argo, commanded by M^{r}. Swaine, who was in the last Expedition in the California and author of a Journal of that voyage in 2 Volumes. We think the attempt laudable, whatever may be the success. If she fails, "magnis tamen excidit ausis."

With great esteem,

BENJ. FRANKLIN.

Mr. CADWALADER COLDEN, *N. Y.*

Of this voyage the Pennsylvania Gazette, "printed for Benjamin Franklin, postmaster, and D. Hall," November 15, 1753, says:

Sunday last, arrived here the Schooner Argo, Captain Charles Swaine, who sailed from this Port last Spring on the Discovery of a North West Passage. She fell in with the Ice of Cape Farewell; left the Eastern Ice, and fell in with the Western Ice, in Lat. 58°, and cruised to the Northward to Lat. 63°, to clear it, but

could not; it then extending to the Eastward. On her return to the Southward, she met with two Danish Ships bound to Ball River and Disco, up Davis' Straits, who had been in the Ice fourteen Days off Farewell, and had then stood to Westward, and assured the Commander that the Ice was fast to the Shore, all above Hudson's Straits to the distance of forty Degrees out; and that there had not been such a severe Winter as the last these 24 Years that they had used that Trade; they had been nine Weeks from Copenhagen. The Argo, finding she could not get round the Ice, pressed through it and got into the Strait's Mouth the 26th of June, and made the Island Resolution, but was forced out by vast quantities of driving Ice, and got into a clear Sea the 1st of July. On the 14th, cruising the Ice for an opening to get in again, she met 4 Sail of Hudson's Bay Ships, endeavoring to get in, and continued with them till the 19th, when they parted in thick Weather, in Lat. 62 and a half, which thick Weather continued to the 7th of August. The Hudson's Bay Men supposed themselves 40 Leagues from the Western Land. The Argo ran down the Ice from 63° to 57° 30′, and, after repeated attempts to enter the Straits in vain, as the Season for discovery on the Western Side of the Bay was over, she went on the Labrador Coast, and discovered it perfectly from 56° to 55°, finding no less than six Inlets, to the Heads of all of which they went, and of which we hear they have made a very good Chart, and have a better Account of the Country, its Soil, Produce, &c., than has hitherto been published.

The Captain says 'tis much like Norway, and that there is no communication with Hudson's Bay through Labrador where one has been heretofore imagined, a high Ridge of Mountains running North and South about 50 Leagues within the Coast. In one of the Harbors they found a deserted wooden House with a brick Chimney which had been built by some English, as appeared by Sundry Things they left behind: and afterwards in another Harbor they met with Captain Goff in a Snow* from London, who informed them that the same Snow had been there last Year, and landed some of the Moravian Brethren who had built that House; but the Natives having decoyed the then Captain of the Snow, and five or six of his Hands, in their Boat round a Point of Land at a Distance from the Snow, under pretence of Trade, and carried them all off (they having gone imprudently without Arms), the Snow after waiting sixteen Days, without hearing of them, went Home and was obliged to take away the Moravians to help to work the Vessel. Part of the Business this Year was to Enquire after those Men. Captain Swaine discovered a fine fishing Bank, which lies but six Leagues off the

*A three-masted vessel, the third mast, abaft the mainmast, carrying a trysail.

Coast, and extends from Lat. 57° to 54°, supposed to be the same hinted at in Captain Davis's Second Voyage. No bad Accident happened to the Vessel, and the men kept in perfect health during the whole Voyage and returned all well.

II. Not satisfied with the results of this attempt, Captain Swaine again sailed in the Argo, the following spring, and the Pennsylvania Journal and Weekly Advertiser of Thursday, October 24, 1754, published in Philadelphia, says:

On Sunday last arrived here the Schooner Argo, Capt. Swaine, who was fitted out in the Spring, on the discovery of a N. W. Passage, but having three of his Men killed on the Labrador Coast, returned without success.

The Gazette also says:

On Sunday last arrived here the schooner Argo from a second Attempt of a Discovery of the Northwest Passage, but without success.

A full "Extract from a Journal of this voyage of 1753" will be found in the quarto volume on "The Great Probability of the Northwest Passage," edited by Thomas Jefferys, Geographer to the King, London, 1768. It embraces 22 pages of Jefferys' Quarto Treatise. In the extract will be found also the statement that a Captain Taylor, in a sloop of about thirty-five tons, was met with July 9, 1753, in the same waters somewhere in about lat. 56° and long. 56° 42′, which sloop had been fitted out from *Rhode Island* to go in pursuit of a Northwest Passage, and if not successful to come down on the coast of Labrador.

In Jefferys' volume, p. xi, will also be found the following:

The voyage of 1752 was made from Philadelphia in a schooner of about sixty tons, and fifteen persons aboard, fitted out on a subscription of the merchants of Maryland, Pennsylvania, New York, and Boston, on a generous plan, agreeable to proposals made them, with no view of any monopoly which they opposed, not to interfere with the Hudson's Bay trade, or to carry on a clandestine trade with the natives of Greenland, but to discover a Northwest Passage and explore the Labrador coast, at that time supposed to be locked up under a pretended right, and not

frequented by the subjects of England, but a successful trade carried on by the French; to open a trade there, to improve the fishery and the whaling on these coasts, cultivate a friendship with the natives, and make them serviceable in a political way, which design of theirs of a publick nature, open and generous, was in a great measure defeated by private persons interfering, whose views were more contracted.

They did not succeed the first year as to their attempt in discovering a Northwest Passage, as it was a great year for ice; that it would be late in the year before the western part of Hudson's Bay could be attained to, and then impossible to explore the Labrador that year, therefore the first part of the design was dropped, and the Labrador was explored. The next year a second attempt was made as to a passage; but three of the people who went beyond the place appointed by their orders, and inadvertently to look for a mine, [samples of which had been carried home the year before, and this at the instigation of a private person before they set out from home, without the privity of the commander,] were killed by Eskimaux, and the boat taken from them. After which accident, with some disagreeable circumstances consequent thereon amongst the schooner's company, and after an experiment made of their disinclination to proceed on any further discovery, it was thought most prudent to return. This short account is given by the person who commanded in this affair to prevent any misrepresentation hereafter of what was done on these voyages.

The last three lines of this paragraph point probably to an item in the following curious letter from the chief merchant of Philadelphia of that day, and the chief "undertaker" of the voyage of 1752.

Letter from Will. Allen, merchant, and, at a later date, Chief Justice of the Province of Pennsylvania, to the proprietary Thomas Penn.

PHILADELPHIA, *Nov.* 18*th*, 1752.

SIR: As I am quite assured that everything that regards the interest and reputation of the Province of Pennsylvania will ever be regarded by you, I therefore beg leave to solicite your favor in behalf of myself and many other merchants of this place. Notwithstanding the repeated attempts of Gentlemen in England to discover the Northwest Passage without success, yet there has appeared among us a spirit to undertake that noble design, which if effected will redound to the honour of your province and to the advantage of us the undertakers.

By the inclosed papers, over which you will be pleased to cast your eye, you will perceive that last year we had intended to put our design in execution, but by the extremity of the winter and other accidents it was postponed to the next year, at which time, as we have bought a vessel and all other material, and engaged a navigator and mariners here, we shall proceed in the affair, and despatch the vessel from here the latter end of March, and are in great hopes, by avoiding mistakes of former attempts, and pursuing, as we think, more proper measures, to be able to effect the discovery of the passage, or, at least, put it out of doubt whether there is one or no. We have been the more encouraged in this attempt by the consideration that, in case our search for the passage should be fruitless, we might strike out a lucrative trade with the coast of Labrador; but we, to our great surprise, are informed we are like to be deprived of the proposed trade by means of a scoundrel of a parson, one James Sterling, who last summer took his passage to London, and there represented the advantage of the trade to the Labrador coast in such a light to Messrs. Hanbury, Buchanan, and others, that it is said they have applied to the Crown for an exclusive patent. This same Sterling, who is a Church of England minister at Newtown, Md., was concerned with us in the original undertaking, and subscribed to bear part of the expense; but after he had by frequent conversations extracted from the person we chiefly depend upon for executing the design, all or chief part of the intelligence that he could give, he has been base enough to endeavour to circumvent us. As a proof of that I assert, I here enclose his original letter, wrote with his own hand, to Mr. Benjamin Franklin. We have also here our paper of subscription for the carrying on of the undertaking, signed by the said Sterling; notwithstanding which, as I said before, he made a voyage to London, and for his discovery and the proposals he laid before the above Gentlemen, he has, though a parson, been rewarded with a collectorship of the customs at the head of the bay. We conceive ourselves very ill used by this false brother; have therefore presented a petition to His Majesty, which comes herewith, praying that no patent for an exclusive trade be granted, which is humbly submitted to your consideration, and I am desired to request that you will please to get it presented if you judge it will answer any good end. The expense attending the sollicitation, &c., I will take care of, with thanks to discharge. Your kind interposition in our behalf will confer a favor on many of the most considerable merchants of this place, and particularly on

Your most obedient humble servant,

WILL. ALLEN.

A VOYAGE FROM VIRGINIA—1772.

The Gentlemen's Magazine, published in London, November, 1772, says:

By a letter from James Wilder, captain of the Diligence, fitted out by subscription in Virginia with a view to the discovery of the long sought for North-west Passage, it appears by the course of the tides there is a passage, but that it is seldom or never open, and he believes impassable. He sailed as high as 69° 11′ and discovered a large bay before unknown.

The American Quarterly Review of 1828 refers to this voyage; also, Scoresby, in his Account of the Arctic Regions, and Macpherson, in his Annals of Commerce, vol. iii. Contributions in sums of £5 and upward were made for it in New York.

A VOYAGE REPORTED TO HAVE BEEN MADE IN 1639 FROM BOSTON.

Hall had notes of a strangely-reported expedition from Boston in 1639, against which the Viceroys of New Spain and Peru were said to have dispatched Admiral de Fonte. These notes will be found in Jefferys' work already referred to. Snow's History of Boston treats the story of the Admiral as a myth, made up by the Magnalia. But Ellis, in his Voyage of the Dobbs and California, says:

It is not at all impossible that either to this, or some other Expedition undertaken from Boston, the present Hudson's Bay Company owe that Discovery which produced their Charter, and put them in Possession of those Places in that Bay, in which they have Settlements at present. Mr Jeremie, who was Governor at Port Nelson while it was in the Hands of the French, and who without doubt, had better Opportunities of knowing the Matters of which he writes than most other People, gives us this account of the Matter. He says, that one Mr de Groiseleiz, an inhabitant of Canada, a bold and enterprising man and one who had travelled much in those parts, pushed his Discoveries at length so far, that he reached the Coasts of Hudson's Bay, from the French Settlements by Land. Upon his Return, he prevailed upon some of his Countrymen at Quebeck to fit out a Bark for perfecting this Discovery by Sea; which being done, and he landing upon

the Coast where he apprehended no European had been before, was amazed in the very Depth of Winter, to hear that some of his Company had discovered an English settlement, as they were pleased to call it near Port Nelson. He went thither with a Design to attack it; but at his Arrival found it a poor miserable Cottage covered with Turf, in which were half a Dozen half starved Wretches, without Arms, and without Strength to use them if they had had any. These People told him that they were Part of a Ship's Crew from Boston, that they were set on Shore to look for a Place, where the Ship to which they belonged might Winter; and that the next Morning the Ice drove the Ship out of the Port, which they never saw more. As we have no Date to this Relation, it is impossible to say whether it was that Ship from Boston mentioned in de Fonte's Account or not; but if it was, and the Crew perished as very probably they might in this inhospitable Country, it affords a clear and easy Solution of that, otherwise unanswerable Difficulty, as to Captain Shapley's making such a Voyage, and so considerable a Discovery, without its coming to be known either in N. England, or in Old. But if we should be wrong in this Conjecture, it would still remain an incontestible Proof that some Attempts were made from Boston, when they were laid aside and forgot at London & Bristol.

[The voyage was probably for trading purposes only.]

PRINCIPAL ENGLISH ARCTIC PUBLICATIONS BETWEEN THE YEARS 1818 AND 1860.

Hall's journals and correspondence show that he had access to the larger number of the following-named authorities. It appears also, in his notes and by a letter from Mrs. Hall, that his library—a total loss on his Polaris voyage—included many of them; some presented and others loaned to him by his New York friends. He had specially noted the "Record of Auroral Phenomena" observed by Arctic voyagers from 1746 to 1856, compiled by the late Peter Force, of Washington. [Smithsonian Contributions, vol. viii, 1856.]

The list of authorities which follows includes Hall's volumes and others consulted in preparing this chapter.

I. *Chief Arctic Authorities from the revival of Arctic exploration,* 1818 *to* 1845.

Barrow, Sir John. "A Chronological history of voyages undertaken chiefly for the purpose of discovering a N. E., N. W., or Polar Passage between the Atlantic and the Pacific. 8°. London, 1818." [This volume contains a synopsis of the voyages made from the early periods of Scandinavian navigation to the revival of the search for the passage under Buchan and Ross, 1818. The chief voyages of modern dates summarized are those of Columbus (1492), the Cabots (1497), the Cortereals (1502), Cartier (1534), Willoughby (1553), Burroughs (1556), Frobisher (1576–'78), Pet and Jackman (1580), Gilbert (1583), Davis (1585), Barents (1594–'97), Jas. Hall (1611), Hudson (1607–'10), Bylot and Baffin (1616), Luke Fox (1631), James (1631), Middleton (1741), Hearne (1769–'72), Phipps (1773), Cook (1779), Mackenzie (1789), Kotzebue (1815–'18), John Ross (1818), Buchan (1818).]

Barrington, Hon. D. The possibility of approaching the North Pole asserted; with an Appendix by Col. Beaufoy. 8°. London, 1818.

Buchan, Capt. D. Voyage of discovery towards the N. Pole performed in H. M. Ships Dorothea and Trent in 1818; edited in 1843 by Captain Beechey, R. N. (Lieut. on the Trent in 1818).

Ross, Capt. John, R. N. A voyage of discovery made under orders of the Admiralty in her Majesty's Ships Isabella and Alexander for the purpose of exploring Baffin's Bay and enquiring into the probability of a N. W. passage, 1818. 4°. London, 1819.

Fisher, A. Journal of a voyage to the Arctic Regions in 1818, in H. M. S. Alexander. 8°. London, 1819.

Scoresby, W., jun. An account of the Arctic Regions, with a history and description of the Northern Whale Fishery. 2 vols. 8°. London, 1820.

Parry, Capt. W. E. Journal of a voyage for the discovery of a N. W. Passage from the Atlantic to the Pacific, 1819–'21, in her Majesty's Ships Hecla and Griper. 4°. London, 1821.

Von Wrangell, Baron F. Narrative of an Expedition to the Polar Sea in 1820. Translated by Col. Sabine.

Fisher, A. Journal of a voyage of discovery to the Arctic Regions in H. M. S. Hecla and Griper in the years 1819–'20. 8°. London, 1821.

——— Journal of a second voyage for the discovery of a North West passage from the Atlantic to the Pacific in his Majesty's Ships Fury and Hecla, 1821–'23. 4°. London, 1824.

Lyon, G. F. The private Journal of Capt. G. F. Lyon of H. M. S. Hecla during the recent voyage of discovery under Capt. Parry, 1821–'23. 12°. London, 1824. [Contains much of ethnological interest.]

Franklin, Sir John. Narrative of a Journey to the shore of the Polar Sea in the years 1819–'22. 4°. London, 1823.

Parry, Capt. W. E. Journal of a third voyage for the discovery of a N. W. passage, 1824–'25: H. M. Ships Hecla and Fury. 4°. London, 1826.

Lyon, Capt. G. F. A brief Narrative of an unsuccessful attempt to reach Repulse Bay through Sir Thomas Roe's Welcome in H. M. S. Griper in 1824. 8°. London, 1825.

Franklin, Capt. John. Narrative of a 2d Expedition to the shores of the Polar Sea, including an account of a detachment to the Eastward by John Richardson, 1825–'27. 4°. London, 1828.

Beechey, Capt. W. F., R. N. Narrative of a voyage to the Pacific and Bering's Strait to co-operate with the Polar expedition (Franklin's 2d land journey) in H. M. Ship Blossom, 1825–'28. 8°. London, 1831.

Ross, Capt. John. Narrative of a second voyage in search of a N. W. Passage, and of a residence in the Arctic regions during the years 1829–'33, including the Reports of James C. Ross and the discovery of the N. Magnetic Pole. 4°. London, 1835.

Parry, W. E. Narrative of an attempt to reach the N. Pole in boats fitted for the purpose and attached to H. M. S. Hecla in the year 1827. 4°. London, 1828. Lat. reached, 82° 43′. (The Spitzbergen route.)

Back, Capt. Geo. Narrative of the Arctic Land Expedition to the Mouth of the Great Fish River and along the shores of the Arctic Ocean in the years 1833–'35. 4°. London, 1836.

King, R., M. D. Narrative of a journey to the shores of the Arctic Ocean under Capt. Back in 1833–'35.

Back, G. Narrative of an Expedition in H. M. S. Terror; undertaken with a view to Geographical discoveries on the Arctic shores, 1836–'37. 8°. London, 1838.

Simpson, Thomas. Narrative of the Discoveries on the N. Coast of America effected by the Officers of the Hudson's Bay Company during the years 1836–'39. 8°. London, 1843.

[An account of these, communicated to R. Geog. Soc'y by Governor Pelly, of the Hudson Bay Co., in R. Geog. Soc'y Journal, vol. viii, 1838.]

II. *Chief English and French Arctic publications issued between the years* 1845 *and* 1860.

Barrow, Sir John. Voyages of Discovery and research within the Arctic regions from the year 1818 to 1845. 8°. London, 1846.

Rae, Dr. John. Narrative of an Expedition to the Shores of the Arctic Sea in 1846 and 1847. 8°. London, 1850.

Richardson and Rae. Journal of a Boat Voyage in search of Sir J. Franklin in 1848. 2 v. 8°. London, 1851.

Goodsir, R. A. An Arctic Voyage to Baffin's Bay and Lancaster Sound in search of friends with Sir J. Franklin, in 1849. 8°. London, 1850.

The Franklin Expedition. Considerations on Measures for the discovery and Relief of our absent adventurers in the Arctic regions. London, 1850.

Snow, W. P. Voyage of the Prince Albert in search of Sir J. Franklin in 1850. 8°. London, 1851.

Kennedy, Wm. A short Narrative of the second Voyage of the Prince Albert, 1851. 8°.

Sutherland, P. C., M. D. Journal of a Voyage in Baffin's Bay and Barrow Straits performed in the years 1850–'51 by H. M. S. Lady Franklin and Sophia under Capt. W. Penny in search of the Missing Ships Erebus and Terror. 2 vols. 8°. London, 1852.

Bellot, J. R. Journal d'un Voyage aux mers polaires exécuté par Lieut. de Vaisseau de la Marine Française, J. R. Bellot, à la recherche de Sir J. Franklin en 1851–'52. 8°. Paris, par M. Julien Lemer.

——— Memoirs of, with Journal. 2 v. 8°. London, 1855. Revised by M. de la Roquette: Soc. de Géographié de Paris.

Belcher, Capt., Sir E. The last of the Arctic Voyages: the Expedition in H. M. S. Assistance, 1852–'54. 2 v. 8°. London, 1855.

Seeman, Berthold. Narrative of the Voyage of H. M. S. Herald, 1845–'51, under Capt. H. Kellett. 8°. London, 1853.

Inglefield, Commander E. A. A Summer Search for Sir John Franklin. 8°. London, 1853.

Kane, Elisha Kent, U. S. N. Access to an Open Polar Sea. 8°. New York, 1853.

——— U. S. Grinnell Expedition in search of Sir John Franklin. 8°. New York, 1853.

——— Arctic Explorations. The Second Grinnell Expedition in search of Sir John Franklin, 1855. 2 v. 8°. Philadelphia, 1856.

Kane, Elisha Kent, U. S. N. Report to Hon. Sec'y Navy of the Voyage of the Advance; Sec'y Dobbin's Report to Congress, 1853.

——— Astronomical Observations in the Arctic Regions. 4°. 1860. Smithsonian Contributions, vol. 12.

——— Meteorological Observations in the Arctic Regions. 4°. 1860. Smithsonian Contributions, vols. 11 and 12.

De Haven, Lieut. Edwin J. Instructions to, from Hon. W. B. Preston, Sec'y Navy, for his command of the Advance and Rescue, in Report of Sec'y Navy for 1850–'51.

——— His report to Hon. W. A. Graham in Sec. Navy's Report for 1851–'52.

Hartstene, Lieut. H. J., U. S. N. Report of the cruise of the Release and the Arctic in search of Dr. Kane; in Report of Hon. Sec'y Navy for 1855–'56.

Markham, C. R., Sec. R. G. Socy. Franklin's footsteps; a sketch of Greenland along the shores of which his Expedition passed and of the Parry Islands. 1853.

McDougall, F. The Eventful Voyage of H. M. S. Resolute in the Arctic regions in search of Sir J. Franklin, 1852–'54. 8°. London, 1854.

Osborn, Capt. S., R. N. Discovery of the N. W. passage by Capt. McClure in H. M. S. Investigator, 1850–'54. 8°. London, 1857.

——— Stray leaves from an Arctic Journal, or 18 mos. Service in the Arctic regions.

Armstrong, A. (M. D.). Personal Narrative of the discovery of the N. W. passage while in search of the Expedition under Sir John Franklin, 1850–'54. 8°. London, 1857.

Malte Brun, V. A., Vice Pres. Geog. Society of Paris. Coup d'œil d'ensemble sur les differentes expéditions entreprises à la recherche de Sir J. Franklin et sur ses découvertes géographiques. 8°. Paris, 1855.

Roquette, M. de la. Des dernières Expéditions faites à la recherche de Sir John Franklin et de la Découverte d'un passage par mer de l'Ocean Atlantique à l'Ocean Pacifique. Paris, 1856.

——— Notice biographique sur l'Admiral Sir J. Franklin. 4°. 1856.

Richardson, Sir John. The Polar Regions (from the Encyclopœdia Britannica). 1856.

——— Life of Sir John Franklin in the Britannica.

McClintock, Capt. F. Leopold, R. N. The discovery of the fate of Franklin and his Companions, 1859. 8°.

Young, Capt. Allen. The Search for Franklin. In Cornhill Magazine for 1860.

Hayes, I. I. The Open Polar Sea. Narrative of a Voyage of discovery in the Schooner United States. 8°. New York, 1860.

Osborn, Admiral Sherard, R. N. The Career, last voyage, and fate of Franklin. 8°. London, 1860.

Malte Brun, V. A. La destinée de Franklin devoileé. 8°. Paris, 1860.

Brown, J. The N. W. Passage and the plans for the Search for Sir J. Franklin. 8°. London, 1860. This work contains a satisfactory review of both subjects, including the results of McClintock's voyage.

Official reports of the English expeditions, including such as those made by Dr. Rae and by Anderson who brought the first news of Franklin's expedition, and other returns which have not appeared in the form of narratives, will be found in the Parliamentary Papers, beginning with the Instructions to Franklin, in the Blue Books, and in the papers issued by the Admiralty Hydrographic Office. The reports and discussions of most value outside of these, will be found in the Journals and Bulletins of the European and American geographical societies; especially in those of the Royal Geographical Society, London; the Bulletins de la Société de Géographie, Paris; the Annales de Voyage edited by Malte Brun, and the Journal of the American Geographical Society, New York; and in Petermann's Geographische Mittheilungen. Copious references to all of these are given in "Die Literatur über der Polar Regionen," edited for the K. K. Geographische Gesellschaft, of Vienna, by Chavanne, Karpff, and Le Monnier. 8°. Vienna, 1878.

CHAPTER J.

PREPARATORY WORK FOR THE SECOND EXPEDITION.

SEPTEMBER, 1862, TO DECEMBER, 1862

CHAPTER I.

PREPARATORY WORK.

HALL RETURNS FROM HIS FIRST EXPEDITION—TELEGRAPHS FROM ST. JOHN'S, NEWFOUNDLAND, EXPRESSING HIS PURPOSE OF A SECOND VOYAGE—WRITES TO MR. GRINNELL FROM CINCINNATI, DESIRING TO PRESENT THE FROBISHER RELICS TO THE ENGLISH PEOPLE—HIS ABSTRACT OF DILLON'S DISCOVERY OF THE RELICS OF LA PEROUSE'S EXPEDITION—STUDIES HAKLUYT, PURCHAS, AND OTHER AUTHORITIES, AND FINDS PROOF OF THE GENUINENESS OF HIS DISCOVERIES—READS A PAPER BEFORE THE AMERICAN GEOGRAPHICAL SOCIETY, AVOWING HIS PURPOSE OF RETURNING NORTH THE FOLLOWING SPRING—ACKNOWLEDGMENT BY THE ROYAL GEOGRAPHICAL SOCIETY OF THE RECEIPT OF THE RELICS—CORRESPONDENCE WITH MR. JOHN BARROW AND WITH CAPTAIN BECHER, R. N., RESULTING IN THE PREPARATION OF A NEW ARCTIC VOLUME BY ADMIRAL COLLINSON, R. N., FOR THE HAKLUYT SOCIETY—HALL'S ACCOUNT OF HIS DISCOVERIES READ BEFORE THE ROYAL GEOGRAPHICAL SOCIETY, LONDON—THEIR GENUINENESS CONFIRMED BY RAE, BARROW, MARKHAM, AND YOUNG—HIS ABSTRACT OF THE THREE EXPEDITIONS OF SIR MARTIN FROBISHER—ADDENDA.

Hall's preparations for his Second Expedition, which this Narrative is now to record, occupied a period of nearly two years. The labors of those years, by demonstrating the successful results of his first voyage, and by the interest created through the publication of his "Arctic Researches", secured his second outfit.

The purpose of the first voyage—to find the records of the Franklin Expedition, and, if possible, some of the survivors—was entirely defeated by the loss of his sole dependence—his boat. The purpose

was but strengthened by defeat. He gave proof of this before his arrival in the United States by a telegram from St. John's, Newfoundland, to his friends, Mr. Grinnell and Mr. Field, of New York, and Mr. Greenwood and Mr. Bishop, of Cincinnati; a dispatch which began with the words, "I am bound for the States to *renew voyage*", and which reads throughout more like news from an excursionist than from one who had been fighting his way through two Arctic winters. The fortitude into which those severe experiences had disciplined him, seems to have shown itself steadily throughout the succeeding two years of working and waiting which are now to be traced.

Arriving in New London September 13, 1862, and placing under the care of Capt. S. O. Budington the Eskimos, Ebierbing (*Joe*) and Tookoo-li-too (*Hannah*), who had joined their fortunes with his own, two years before, Hall made a short visit to his family and to his earliest Arctic friends in Cincinnati. While there, his letters evinced much concern as to the opinions which the English people might form from the reports by the press of his late voyage, a hasty impression having been received from him that he had probably determined the fate of two boats' crews of Franklin's Expedition. He had been led into this error by a party of Sekoselar Innuits, but promptly corrected it in the columns of the New York press, and, afterward, more fully in a paper read before the American Geographical Society and in the "Arctic Researches." His apprehensions were that before the first correction could reach England the error would prejudice the English against the genuineness of the discoveries he had been making in the region visited by Sir Martin Frobisher three centuries before.

The apprehension proved to have been groundless. It had, how-

ever induced Hall to decline lecturing in Cincinnati, and to entertain a new idea in regard to his discoveries and to the proper disposition of the valuable relics of Frobisher's Expedition, which he had found on this first voyage. Writing to Mr. Grinnell, he expressed his belief that he ought to go over immediately to England and present these to the English sovereign and people, as Captain Dillon in 1829 had presented the remains of La Perouse's Expedition to Charles X and to the French nation.*

He naturally set a value on his late explorations, and had reason to suppose they would interest the English people. He believed that the account given by Frobisher himself of the country he had visited, was so indefinite that for nearly three hundred years the civilized world had been in doubt of the precise localities. Beste's Narrative to be found at that time only in Hakluyt's collection, and Barrow's history which Hall had in hand while traveling over the land, were proof enough of the indefiniteness of the geographical positions named by Frobisher. Up to the time of Hall's visit in 1861, no opportunity had been embraced for identifying these localities, or for confirming the record of what Frobisher's three expeditions had reported as accomplished on

* This he had found fully noted in the "Narrative and Successful Result of a Voyage in the South, performed by order of the Government of British India to ascertain the actual fate of La Perouse's Expedition of 1785; made by Chevalier Capt. P. Dillon in 1828." His attention having been closely drawn to this history, he had made the following abstract, the italicized parts of which are those underscored in his manuscript, as arguments for his yet finding survivors of Franklin's party.

"Louis XVI and the French nation having determined to contribute their share in enlarging our acquaintance with the globe and its inhabitants, ordered an expedition to be fitted out in 1785, consisting of two of the finest French frigates, La Boussole and L'Astrolabe. Neither labor nor expense was spared in completing the expedition, to which were attached some of the ablest and most scientific men of Europe.

"To secure the success of this enterprise the ships' companies of which numbered 240 souls, it was deemed necessary to select a man of the highest professional talent to command the expedition. La Perouse was chosen; his distinguished naval exploits, scientific acquirements, and enterprising character having pointed him out as the fittest person to be thus honored.

"The expedition sailed from Brest, August, 1785, and, after making discoveries in various

those shores. The Admiralty chart of 1853 and that furnished for the volume of De Haven's Expedition, still had upon them the so-called "Strait" as reported by Frobisher, which was supposed to be a passage westward to the further part of Hudson's Bay; but navigators have always chosen Hudson's Straits in passing to and from that bay. Had any one attempted the passage through what was laid down on their charts as Frobisher's Strait, they might have anticipated Hall's discovery, correcting Frobisher and proving this to be a Bay. But the language of nearly all of the geographical writers on Frobisher's voyages was obscure, and the charts of the first half of the century, inaccurate. Hall had reason for desiring to prove the genuineness of his discoveries, and he expressed a wish to place his proofs before a committee that might be appointed in London to examine his notes, his relics, and himself.

Sir Martin's name was that of one of the first of Englishmen

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quarters, anchored in Botany Bay January 26, 1788. Here La Perouse met with the British squadron under Governor Phillips, and committed to him what proved to be his last dispatches for France. At the close of February the French set sail for further discovery, but nothing more was heard of La Perouse for *thirty-eight years*, when Captain Dillon, commanding a vessel sent in search of the remains of the lost expedition, ascertained the fate of the long lost navigator. On the island of Tucopia (Barnwell Island), lat. 12° 15′ S., long. 169° W., Dillon, in 1826–'27, obtained information that. many years before, two vessels had been wrecked near the island of Manicolo, within less than one day's sail of Tucopia. Through Martin Burhart, a Prussian who had resided there fourteen years, Captain Dillon learned that many from the shipwrecked crews had escaped to the islands. He hastened to Manicolo and there procured many relics from the natives; and, from the depths of the seas in which the vessel had been wrecked, incontrovertible proofs of their destruction forty years before; and at length he learned that many of the white men were saved, but that the last *remnant of them had died only three years before*, after surviving *thirty-seven* years from the time of the wreck. On the island of Manicolo had lived some of these survivors of the ill-fated expedition long after the world had given them up as dead. The expedition sent out by France, under Admiral Entrecasteau, in 1791, had visited La Croix, a few leagues only from Manicolo, where survivors of the lost expedition were then living, and the inhabitants of both islands had kept up constant intercourse with each other. Yet this expedition, which was out six years, gained no intelligence whatever of La Perouse, while by that fearful scourge scurvy, it lost one hundred and twenty officers and men, though its voyage was mostly in the warm zone.

"Dillon's men numbered 87 souls, and, at one time, nearly every one was prostrated by the diseases of the tropical region. Still, in that clime—more inhospitable than *that, surely, of King William's Land*—did some of La Perouse's companions survive *for nearly forty years.*"

to sail in quest of the Northwest Passage, and it was one of no less fame under Drake and Howard, for in 1588 he was knighted for service under the High Admiral against the Armada. Hall's enthusiasm

MARTINUS FROBISHERUS, EQUES AURATUS.

(From "The Three Voyages of Martin Frobisher," edited by Admiral Collinson, R. N.)

prompted him to say that the age of his Frobisher relics and the remarkable circumstances attending them stamped them as worthy gifts for Queen Victoria. Barrow had shown him that the expeditions

of Sir Martin were among the favorite objects of Elizabeth. She had shown her favor by her throwing around Sir Martin's neck a chain of gold, and by her letters of praise written to him.

Conferring, however, with Mr. Grinnell after returning from Cincinnati, he decided to send the relics out to England, to the care of Mr. Cornelius Grinnell, in place of exhausting his own means and delaying his plans by a visit to London. In the mean time, applying himself closely at the rooms of the American Geographical Society and of the Astor Library to the old authorities Hakluyt, Purchas, and others, he had the satisfaction of further confirming his discoveries. After a study of some weeks previously to meeting the Geographical Society, he wrote to Budington:

> I find much that is valuable in proving that the relics are, beyond all question, Frobisher's. It will perhaps startle you to hear that one of his vessels went into the bay I call Ward's bay, through Beare Sound. It may be the English will dispute my discoveries, but I covet the opportunity to show the facts.

Opportunity for this was early afforded. At the meeting of the American Geographical Society, held, as at that time was usual, in the hall of the Historical Society, of New York, he was introduced by Mr. Grinnell and made a report which will be found noted in "the Proceedings", under the title of "An abstract of a Paper on some Arctic Discoveries."

In this paper, after referring to his statements before the society made two years previously, Hall re-stated in full that the original purpose of his late voyage was to visit King William's Land and Boothia, and there spend two years, if needed, in gathering materials for concluding in a more satisfactory way the history of Franklin's Expedition; to recover the logs of the ships Erebus and Terror, with all other manuscripts belonging to that expedition; and, especially, to rescue

some lone survivor or survivors that peradventure might be found living with the Eskimos. He then gave an account of Messrs. Williams and Haven's generously free conveyance to Northumberland Inlet of himself and his Eskimo companion, Kud-lar-go, with his boat, provisions, and stores; of his boat being wrecked the September following; and of his long residence with the natives, during which he had ingratiated himself with them, adopting their style of dress, living in their snow huts, and feeding on their raw whale-skin, walrus and seal meat.

With some exultation, he said that in September, 1861, he had landed on an island which the Innuits and their ancestors from time immemorial had called *Kodlunarn*, or White Man's Island, from the tradition that strangers had lived there and tried to escape from it;—on which island he had found remains of stone houses, coal, iron, and glass, all covered with the moss of ages; and that he had visited every accessible place named by the Eskimos as connected with the fate of the strangers living there, as they said, "many, many years ago." He added his convictions that he had thus been the first to revisit the precise localities of Frobisher's three expeditions of 1576, '77, and '78, and quoted from Hakluyt and other works in which the materials taken out by Frobisher for the erection of *stone houses* and everything necessary for the colony of one hundred men are detailed; and he exhibited the specimens which he had brought from the ruins, asking the Geographical Society to inspect them rigidly in evidence for or against his statements.

He then showed that during his two years' northern residence, he had explored over one thousand miles of coast, making as careful a survey as his means and instruments permitted, and proving that the water which had for three centuries been called Frobisher's Strait was

a wide bay. He added, "Inasmuch as I have failed in the great object for which I went out, it is my intention to try again in the following spring."

The Eskimo family, Ebierbing, Too-koo-li-too, and their child, *Tu-ker-li-ke-ta* (the Butterfly), who had come down from Groton in their full arctic dresses of deer and seal skin, were introduced to the audience. They exhibited a variety of costumes and implements, and with their young child were the objects of much interest, and were called on for many replies to questions interpreted to them by Hall. Valuable donations of relics were sent to the Smithsonian Institution. A part of the geological collections was presented to the New York Lyceum of Natural History, and was the subject of brief reports to the lyceum by Mr. R. P Stevens and Mr. Thomas Egleston. [An account of this, and a discussion of another part of his collections, afterward presented to Amherst College by J. J. Copp, Esq., of Groton, Conn., will be found in Appendix III, illustrated by drawings of some of the fossils. This discussion, by Prof. B. K. Emerson, of Amherst College, is indorsed by Prof. C A. White, of the United States Geological Survey of the Territories, as a desirable addition to our knowledge of the mineralogical and geological character of the Arctic Regions.]

A number of other relics were exhibited at the residence of Mr. Henry Grinnell for some time before their transmission to England. At the close of the year they were presented to the English people, through the Royal Geographical Society, London, whose acknowledgment of their receipt names: 3 cases and 1 cask of relics; and 1 piece of iron weighing 20 pounds. Hall sent with them a carefully prepared outline sketch of Frobisher's Bay, and three diagram maps, one being that of the Countess of Warwicke Sound of Frobisher. In connection

with this donation, he entered into a correspondence with Mr. John Barrow, son of Sir John Barrow who has been so justly styled the Father of Modern Arctic Enterprise, with Commander A. B. Becher, R N., of the Admiralty, and with Mr. C. R. Markham, then, as now, one of the Secretaries of the Royal Geographical Society, making close inquiries in regard to such points in Frobisher's history as were inaccessible to him, the manuscripts to be consulted being found only in the British Museum.

His letters are in evidence of his earnest desire to possess himself of every fact in the history. The correspondence contains geographical notes of intrinsic value, and shows that his claims as a discoverer were promptly admitted on the transparent consistency of the details given in his letter before the reception of his charts and relics.

Commander Becher had published the results of his own investigations of Frobisher's voyages in an elaborate paper in the Journal of the Royal Geographical Society (vol. 12, 1842). On receiving Hall's letter to Barrow, he wrote to Hall: "I *have no doubt* of your relics being those left by Frobisher's party. Warwicke Island and Sound were the principal resort of the voyagers. I perceive that your latitude and mine of Queen Elizabeth's Foreland are pretty near each other"

This correspondence produced an incidental result which has proved valuable to geography and to the libraries of our day. Captain Becher's purpose expressed in his letter to Hall, to urge upon the Hakluyt Society the issuing of a worthy reprint of Frobisher's journals, accorded with the general sentiment expressed by the editor of the

Geographical Society's Journal, when publishing, in 1842, the paper to which reference has been made: "That it was not creditable to England to have done so little for preserving and rendering available the records of the navigation of Frobisher's age." The explorations of Hall and the correspondence now referred to resulted in the preparation by Admiral Collinson, R. N., for the Hakluyt Society, of a new and valuable volume of Frobisher's voyages. Admiral Collinson, C. B.—now Elder Brother of Trinity House, London—well known as himself an eminent Arctic explorer, has given in this volume a reprint from the first rare edition of Hakluyt's voyages, with selections from manuscripts and documents in the British Museum and in the State Paper Office, accompanied by two rare old maps and a picture of Sir Martin. The work, issued in 1867, was cordially dedicated "to Henry Grinnell, of New York, as a tribute of respect and admiration not only for his conduct and generous co-operation in the search for Sir John Franklin and his companions, but for the interest he had shown in, and the aid he had afforded to, Polar exploration in the present day."

In the introduction to this work, Admiral Collinson said:

> In the appendix will be found a list of the relics of the Frobisher Expedition brought home by Mr. C. F. Hall in 1863, which are now deposited at the Royal Geographical Society; and I am one of those that believe that his exertions in exploring King William's Land for the journals and records of the Franklin Expedition will be attended with success. When this island was visited by Sir L. McClintock and Captain Hobson the ground was covered with snow. Mr. Hall intends passing the summer upon it, and the knowledge he has obtained of the Eskimo language and character during his two years' residence in Frobisher Bay will enable him to gain their confidence.

The catalogue of relics referred to by Admiral Collinson occupies, with its brief accompanying note, eight pages of this new Frobisher volume. It is signed by C. F. Hall, and dated from New York, Febru-

ary 7, 1863. At the tenth meeting of the Royal Geographical Society for that year, held April 13, a paper prepared by him to be read on the receipt of the relics was presented from Mr. H. Grinnell, and read by the Secretary of the society, Dr. Norton Shaw. This paper and the discoveries reported in it elicited the commendations of Sir R. Murchison, President of the society, and of the Arctic explorers, Sir George Back, Capt. Sherard Osborn, and Dr. Rae, and occasioned the following letter from Mr. John Barrow:

17 HANOVER TERRACE,
Regent's Park, April 16th, 1863.

To C. F. HALL:

SIR: I should sooner have answered your letter of 25th of February, but there has been a longer delay than I expected in the reading of your paper owing to the Easter holidays. It was read on Monday evening at the Royal Geographical Society in a very crowded meeting, many being unable to get seats.

In consequence of a weakness in my throat I was compelled to give up all idea of reading it myself, as the room is ill adapted for hearing, being long and narrow, and the speaker fronting his audience in the centre; consequently at the ends of the room it is not easy to command attention. However, our secretary, Dr. Norton Shaw, read it right well. He took great pains, and I assure you you might have heard a pin drop during the whole time. The paper was very well received, but as it was rather long and another paper to come on, the discussion was limited.

Dr. Rae fully corroborated your statement of reliance to be placed on Eskimo statements and traditions. I have sent you a report of the proceedings given in the Times.* Of course, it is very abridged. Cornelius Grinnell was present, and will doubtless write to you fully.

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* [Extract from a letter to Mr. Henry Grinnell.]

* * * I send you the Times of the 15th instant, which gives a longer account than is usual for them to publish of the meeting of the Royal Geographical Society. I wish you had been there to hear the eulogy pronounced upon you by Sir Roderick Murchison and Captain Osborn, and the manner in which it was received by the audience.

The report in the Times gives but a faint idea of what was said. It was enough to make any of your family feel proud. It seemed as if Osborn could not say too much of the obligation

As regards the final disposal of the Frobisher relics, I think they should either be placed in Greenwich Hall or in the Royal United Service Institution with the Franklin relics. Although your letter has been unanswered it has not been neglected.

Mr. Major, of the British Museum, whom I met at the Geographical Society, is getting all the extracts you require made for you, and they will shortly be ready.

Believe me, my dear sir, with best wishes for your success in your next enterprise, yours very truly and with great respect,

JOHN BARROW.

The action of the Royal Geographical Society and the courteous and encouraging letters received from such officers as have been named, proved further incentives to Hall to prepare for a return to the fields of exploration. His disappointment in not receiving a single volume of the Hakluyt series, for which he asked in the correspondence with the secretary of the Hakluyt Society, was compensated for by a loan of the whole, at a later date, from the library of Mr. J Carson Brevoort, of Brooklyn, L. I. The charts which he needed were courteously forwarded by Captain Becher, of the Admiralty, during the ensuing season, through the British consul at New York.

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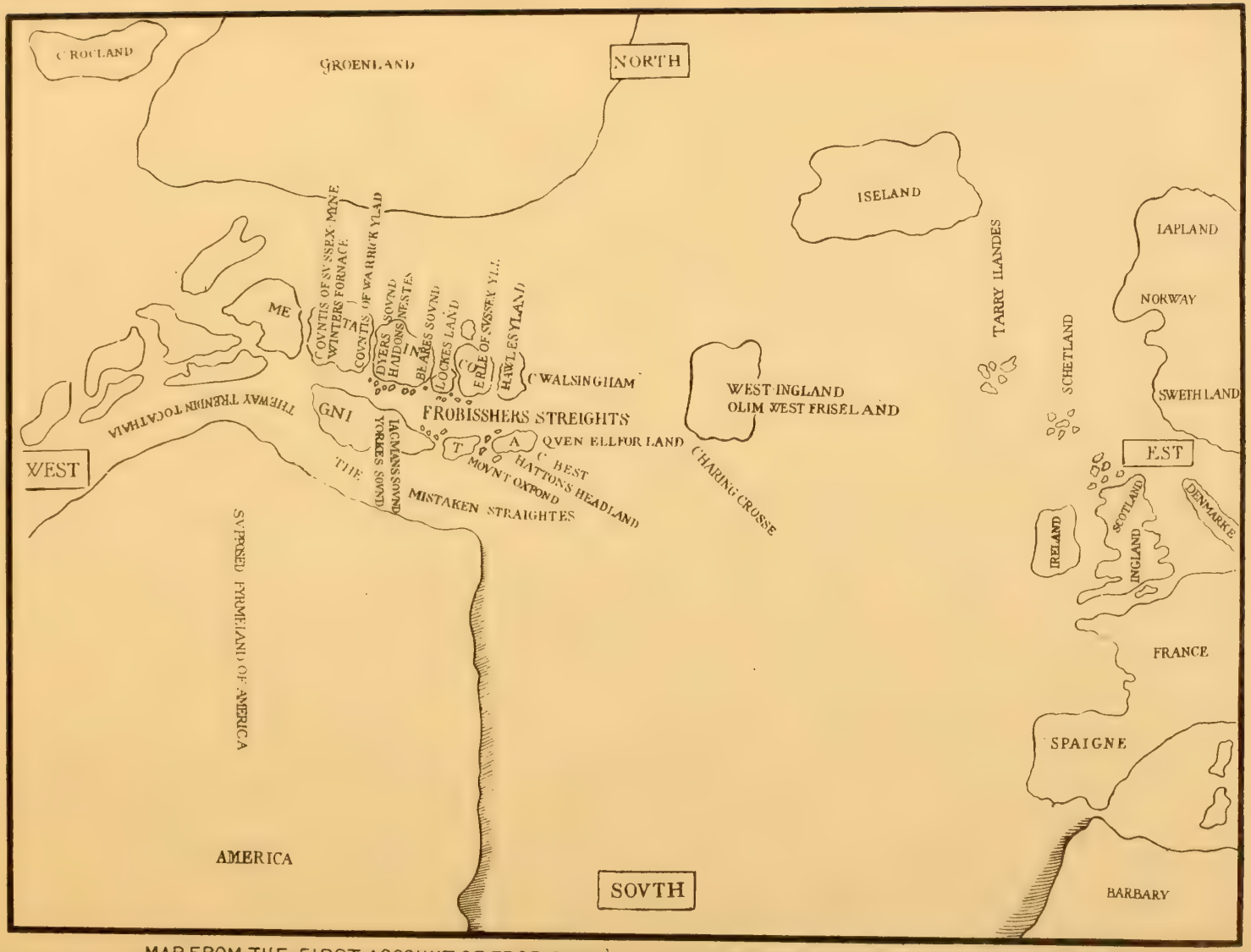
and indebtedness of every Englishman to you and of the admiration of your liberalty and philanthropy. The whole affair passed off most satisfactorily. Sir George Back spoke in high terms of Mr. Hall's perseverance and energy, and had no doubt that the relics were those of Frobisher. Rae, Barrow, Young, Markham, and several others also expressed the same opinion. It was thought best to strike out that portion of the paper relating to the supposed remains of Sir John Franklin's expedition, as it would be painful to the feelings of their relations. Rae strongly corroborated the remarks of Mr. Hall regarding the truthfulness of the traditions of the natives.

The relics will be for the present exhibited in the society's rooms, for inspection of scientific men, until their final disposition, which is in the hands of Sir R. Murchison and Mr. Brown.

It was delightful to witness the respect and kind feeling exhibited by the eminent discoverers present for the labors of a brother explorer.

If Mr. Hall could only reach King William's Land and find the Records of Franklin what a name he could make for himself! I am afraid it can only be accomplished by a vessel to Prince Regent's Inlet or overland by Rae's or Anderson's route through the Hudson Bay Company's Territory



MAP FROM THE FIRST ACCOUNT OF FROBISHER'S VOYAGES, BY GEO. BESTE, WHO SAILED WITH HIM.
(ADMIRAL COLLINSON'S EDITION, FOR THE HAKLUYT SOCIETY.)

HALL'S ABSTRACT OF THE FROBISHER EXPEDITIONS.

In Sir John Barrow's history Hall had before him the following account of Frobisher's three expeditions: * * *

"Whether Frobisher had collected the reports of the Northwest Passage to Cathaia having been actually performed, or whether alone from his knowledge of the sphere and all other skilles appertaining to the arte of navigation, his hopes were grounded, it is quite certain that he had persuaded himself the voyage was not only feasible but of easy execution. His friends, however, were not so easily persuaded to enter into his scheme; but as it was the only thing of the world left yet undone whereby a notable mind might be made famous and fortunate, he persevered for fifteen years without being able to acquire the means of setting forth an expedition on which his mind had been so long and so resolutely bent.

"At length, in the year 1576, by the countenance and assistance of Dudley, Earl of Warwick, and a few friends, he was enabled to fit out two small barks, the Gabriel of 35 and the Michael of 30 tons, together with a pinnace of 10 tons. With this little squadron he prepared to set out on his important expedition, and on the 8th of June passed Greenwich, where the court then was, and Queen Elizabeth bade them farewell by shaking her hand at them out of the window.

"On the 11th July, 1576, they came in sight of Friesland, rising like pinnacles of steeples, and all covered with snow! *This island, whose position has so greatly puzzled geographers*, could not be the Friesland of Zeno, but, being in 61° of latitude, was evidently the southern part of Greenland. The floating ice obliged Frobisher to stand to the southwest, till he got sight of Labrador, along the coast of which he then stood to the westward, but could neither reach the land nor get soundings on account of the ice. Sailing to the northward he met with a great island of ice which fell in pieces, making a noise as if a great cliffe had fallen into the sea. After this he *entered a strait* in lat. 63° 8′. This strait, to which his name was given from his being its first discoverer, is the same which was afterwards named Lumley's Inlet, but Frobisher's Strait *was for a long time supposed by geographers to have cut off a portion from Old Greenland*, till Mr. Dalrymple and others showed the fallacy of such a supposition. * * *

"Frobisher set sail for England and arrived at Harwich on the 2d of October, 'highly commended of all men for his greate and notable attempt, but specially famous for the great hope he brought of the passage to Cathaia.' That hope, however, would probably have died away but for an accidental circumstance which had been disregarded during the voyage. Some of the men had brought home flowers, some grass, and one a piece of stone 'much like to a sea cole in color,'

merely for the sake of the place from whence they came. A piece of this black stone being given to one of the adventurer's wives, by chance she threw it into the fire, and, whether from accident or curiosity, having quenched it while hot with vinegar, 'it glistered with a bright marquesset of golde.' The noise of this incident was soon spread abroad, and the stone was assayed by the 'gold finers of London,' who reported that it contained a considerable quantity of gold. A new voyage was immediately set on foot for the following year, in which we are told by Master George Beste, Frobisher's Lieutenant, that 'the Captaine was specially directed by commission for the searching more of this golde ore than for the searching any further discovery of the Northwest Passage.'"

SECOND VOYAGE, 1577.

Frobisher was now openly countenanced by Queen Elizabeth, and on taking leave for his *second voyage* had the honor of kissing Her Majesty's hand, who dismissed him "with gracious countenance and comfortable words." He was besides, furnished with one tall ship of her Majesty's named "y^e^ *Ayde*" of two hundred tunne or thereabouts; and two other little barkes likewise; the one called the *Gabriell*, whereof Master Fenton was Captaine: and the other, the Michael, whereof Master Yorke, a gentleman of My Lord Admirall's was Captaine:" these two vessels were about 30 tons each. On the 27th May (1577) having received the Sacrament and prepared themselves "as good Christians toward God, and resolute men for all fortunes," they left Gravesend, and after a long passage fell in with Friesland, in Lat. 60½°, on the 4th of July, the mountains covered with snow, and the coast almost inaccessible from the great quantity of drift ice. * * *

Four days were here spent in vain endeavor to land, after which they stood for the strait, discovered by them the preceding year. They arrived off the North foreland, otherwise Hall's island, so called after the man who had picked up the golden ore and who was now Master of the Gabriell. They proceeded some distance up the Strait, when, on the 18th of July, the general taking the gold-finers with him, landed near the spot where the ore had been picked up, but could not find in the whole island "a peece as bigge as a walnut:" But all the neighboring islands are stated to have good store of the ore. On the top of a high hill about two miles from the shore they made a columne or crosse of stones, heaped up of a good heighth togither in good sort, and solemnly sounded a trumpet & saide certaine prayers, kneeling about the ensigne, and honoured the place by the name of *Mount Warwicke*. * * *

They now stood over to the Southern shore of Frobisher's Strait, and landed on a small island with the gold finers to search for ore: and here all the sands and cliffes did so glister, and had so bright a marquesite, that it seemed all to be golde, but upon tryall made, it proved no better than black lead and verified the proverbe;—"all is not golde that glistereth." * * *

As the season was far advanced and the general Commission directed him to search for gold ore, and to defer the further discovery of the passage till another time, they set about the lading of the ships, and in the space of twenty days, with the help of a few gentlemen and soldiers got on board almost two hundred tons of ore. On the 22d of August, after making bonfires on the highest mount on this island, and firing a volley for a farewell "in honor of the Right Hon. Lady Anne, Countess of Warwicke, whose name it beareth" they set sail homewards, and after a stormy passage, they all arrived safe in different ports of Great Britain, with the loss only of one man by sickness, and another who was washed overboard. * * *

THIRD VOYAGE (1578).

The Queen and her court were so highly delighted "in finding that the matter of the gold ore had appearance and made show of great riches and profit, and the hope of the passage to Cathaia by this last voyage greatly increased"; that, after a minute examination by Commissioners specially appointed, the voyage was determined to be highly worthy of being followed up. The Queen gave the name of Meta Incognita to the newly discovered country, on which it was resolved to establish a colony. * * * The fleet sailed from Harwich the 31st of May, 1578, and, on the 20th of June, discovered West Friesland, which they now named West England. * * * They found The Strait choked up with ice, and the bark Dennis received such a blow with a rock of ice that she immediately sank, but the people were all saved. "A violent storm now came on and the whole fleet was dispersed. * * * They all however arrived at various ports of England about the 1st of October, with the loss by death of about 40 persons."

ADDENDA TO HALL'S ABSTRACT.

I. There will be found in "Geo. Beste's True Discourse of the late voyage of Discoverie for the finding of a Passage to Cathaya by the North Weast under the conduct of Martin Frobisher Generall," the statements that Frobisher, on his first voyage, sailed 50 miles up the waters which he took for a strait, and believed

that it extended across the continent through which ships might reach *China.* With Christopher Hall, he climbed a high mountain, from which they saw to the southeast the two headlands which marked the entrance to their "Straits." Looking to the northwest, they saw the sea still extending to the horizon. The tides and currents, too, set in from that direction; and thus everything went to confirm Frobisher's belief that he had found another Magellan's Straits. On his Second Expedition his Instructions were not to push through the Strait into China *for the present*, gold being the first consideration.

II. On his third voyage he found "such plenty of black ore, that if the *goodness* might answer the great plenty thereof it might reasonably suffice all the gold gluttons in the World." It is a well known matter of history that Frobisher loaded his ships with this ore, which, on his return to England, proved to be but a black stone filled probably with iron pyrites. It was used only for filling up the London Docks, and for ballasting ships. The Merchant, Michael Lok, who had pledged his means and credit for the outfits of the first and the third expedition, was shut up in Fleet-street Prison and with his fifteen children hopelessly ruined.

Hall brought home some of the like stone, a small quantity of which, loaned with other relics by the Smithsonian Institution, was included in the Arctic exhibit placed for the Naval Observatory in the Government building at the late United States Centennial. The ore is sometimes called Fool's Gold.

III. The author of the latest account of Frobisher's voyages says of Hall:

Nearly three centuries elapsed before the Countess's Sound and Island were again visited by an Anglo-Saxon, and he was an American. In 1861–'2 Captain C. F. Hall spent two years among the Eskimos. The Countess's Island he found to be called Kodlunarn, or the island of the white man. The account he received from the natives of Frobisher's visits is a curious confirmation of the value of tradition among savage peoples. Captain Hall had not then read any narrative of the Admiral's three voyages, and heard the traditions as a new and strange tale, which he was not then in a position to test or correct.

He was told that the white men's ships had come, first two, then three, then many. The white men had taken away two of their women, who had never come back. Many fragments of brick, tiles, iron, et cetera, were shown him. Beste's Bulwark was traced. The small house of lime and stone had been well built, for

Captain Hall found it after the three centuries, in a good state of preservation. They told him also how that their people had captured five of the white men; that they had wintered among them. Then they showed him an excavation on Kodlunarn eighty-eight feet long and six feet deep, which the white men had dug, while on the shore was an inclined trench or slip. Here the five captive Englishmen, having dug up the buried timbers of the Fort, built a large boat, which had a mast in her, with sails. Their boat had proved to be a floating coffin; for, according to the natives, the Englishmen having finished their craft, set sail too early in the season; some froze their hands in the attempt; yet they had finally set out, and had never been seen afterwards.

Such was the sequel of the story of the five Englishmen who had fallen victims to their love of peltry during the first voyage of the 'Gabriel'; and thus were identified the island and long sought port of the third voyage, where the first English Colony was attempted on the American Continent. (Life of Martin Frobisher, with a narrative of the Armada: Rev. F. Jones. London, 1878.)

IV. In the excellent "Collection of Historical Tracts," made by the late Col. Peter Force, of Washington, to be found in the library of the State Department, may be seen the "Neues of Walter Raleigh"; in which tract is a very curious notice of Frobisher's voyages and of their influence on Thomas Cavendish, or "Candish," of London, in determining him, A. D. 1586, to set out on his voyage around the world. Cavendish was the second Englishman who made such a voyage. Drake, in 1578, had attempted to solve the problem of the Northwest Passage, reaching lat. 48° N. only on the western coast of America.

CHAPTER JJ.

PREPARATIONS FOR THE VOYAGE COMPLETED; HALL SAILS FROM NEW LONDON FOR ST. JOHNS.

DECEMBER, 1862, TO JULY, 1864.

CHAPTER II.

HALL LECTURES FOR HIS PERSONAL SUPPORT AND THAT OF THE TWO ESKIMOS—HIS CARE OF THESE PEOPLE; DEATH OF TUK-EE-LI-KEE TA—FRIENDS GAINED FOR THE SECOND EXPEDITION—PLAN OF AN EXPEDITION SUBMITTED BY HALL, MARCH 17, 1863, TO MR. GRINNELL AND R. H. CHAPELL, OF NEW LONDON, CONN.—HALL'S PREFERENCE FOR A PLAN WHICH WOULD NOT INCLUDE WHALING—FINANCIAL DIFFICULTIES—EMBARRASSMENTS IN FORMING NEW FRIENDSHIPS—DETERMINATION TO GO OUT A SECOND TIME, EVEN FOR AN ABSENCE OF TEN YEARS—EXPECTATION OF FINDING NEW WHALING GROUNDS—CORRESPONDENCE ON THIS SUBJECT WITH MR. R. H. CHAPELL AND PROFESSOR BACHE, SUPERINTENDENT UNITED STATES COAST SURVEY—DISAPPOINTMENT AS TO ASSISTANCE FROM THE LEGISLATURE AND FROM THE NEW YORK CHAMBER OF COMMERCE—FAILURE TO OBTAIN A LOAN OF INSTRUMENTS FROM THE GOVERNMENT—CARD TO THE PUBLIC, POSTPONING THE EXPEDITION TO ANOTHER YEAR—HALL RESUMES WORK ON THE "ARCTIC RESEARCHES"—LECTURES BEFORE THE LONG ISLAND HISTORICAL SOCIETY—MAY, 1864, RENEWS HIS APPEAL, INDORSED BY LEADING CITIZENS—LOANS OF INSTRUMENTS—FREE PASSAGE TENDERED BY MR. CHAPELL—HOSPITABLE RECEPTION AT NEW LONDON—SAILS FOR ST. JOHN'S.

His first expedition having secured an honorable place in history, Hall now entered upon a course of lectures, chiefly with the design of convincing the public of his probable success on renewing exploration; but with the additional reasons found in the necessity for securing support for himself and for his two Eskimo friends. He seems to have been carefully mindful of their welfare. "Everything," he wrote to Captain Budington, "must be done to protect the health of these people; the assistance which I hope to receive from them on my sledge trip is too important for us to relax our exertions to have them comfortable." For their benefit he accepted offers of compensation for

their temporary attendance at museums in New York and Boston; but, on learning their personal discomfort, incident to a close and heated atmosphere, he followed the advice of friends in refusing his consent for their presence at any other lectures than his own; and this as more consistent with the character of his work.

During the months of December, 1862, and January, 1863, lectures in Providence, Norwich, Hartford, New Haven, Hudson, Elmira, and other cities secured the attendance of large audiences. Among the prominent citizens of Providence who invited him to that city were Hon. H. B. Anthony, President Sears of Brown University, Hon. J. R. Bartlett, Prof. J. B Angell, Gov. J. Y. Smith, Ex-Gov. E. Dyer, and Maj W. M. Rodman.

After the Arctic lecture in Hartford, Professor Silliman indorsed Hall's work and his proposals for a new expedition by saying, in the Hartford Courant:

> Mr. Hall possesses much knowledge not found in books, the fruits of his own experience; the discoveries he has made in the Polar Regions are regarded by geographers as of decided importance. Indeed, he did not himself realize that importance until since his return after more than two years' exile. No civilized man has, heretofore, been able to identify himself so completely with the Eskimos. Speaking their language and adopting their modes of life and of voyaging, he is enabled to reach with safety, and even with comfort, regions hitherto deemed inaccessible. Old Martin Frobisher has become *redivivus* under the very unexpected revelations now made.

At these conversational lectures Hall traced on his maps of the localities he had visited, the tracks of the old voyagers Frobisher, Davis, Baffin, and others, as well as his own late explorations. The United States flag, loaned by Mr. Grinnell to the expediton of Dr. Kane, and borne by him so near to the Pole, was always saluted by the audience; and the Eskimo family were objects of much interest as

among the first of their race who had domiciled in the United States. Too-koo-li-too showed an unexpected knowledge of the geography of her country, reminding Arctic students of the native woman *Iligliuk*, and of her chart drawn for Parry. The lecturer himself could not claim the polish or the ease of oratory, but as he handled his subject with tact as well as enthusiasm, he succeeded in securing close attention on the part of the audience, and was ready to answer numerous inquiries. His friends regretted that, under a general rule against all pay lectures, the Smithsonian Institution could not give him the use of the audience room in which Kane and Hayes had lectured, for he had hoped to interest the officers of the Government at Washington, and obtain an appropriation, and had been encouraged towards this by prominent men. He seems to have been wholly unable to realize how small is the circle of the liberal for scientific purposes and how narrowed that circle was at the time by the war. He solicited the aid of the Hon. Henry Wilson, of the United States Senate, to obtain an appropriation by Congress of $25,000.

The proceeds of the lectures were by no means encouraging. He had proof of their having secured many friends in eminent positions, but as to the pecuniary gain "he was even worse off than when he started out." The necessary expenses generally devoured the proceeds of admission fees, made low to suit the war times. Contrary to the general supposition, nothing at all adequate to the support of his Eskimos was ever realized from this source; the contributions for them from Mr. Grinnell, however, exceeded six hundred dollars, and other generous friends not unfrequently volunteered their aid.

In despite of discouragements, Hall still pushed forward his plans, publishing his first outlines of them in the columns of the New York

Journal of Commerce, December 3, 1862 Very probably a sanguine temperament, excited sometimes by even a few strong words of sympathy from friends, prompted him to give unwarranted weight to such words. As a picture of his feelings and of his way of recording his experiences, a single extract is given from a letter written at this date:

"My heart is too full to record the happiness of a meeting to-night. Mr. Grinnell's whole family are so deeply devoted to my renewed expedition, that Mr. G. and his wife offer their son, now in the United States Navy, to go with me to King William's Land, and, if need be, he will contribute $10,000 to insure a research. 'There *must* be something more done,' he said, 'in search of Franklin's Expedition.'" "When England hears of this," Hall wrote to Budington, "I would not wonder if other expeditions should follow." This last expression was made at a time when the English Government were adhering to their final refusal for all further search. The subject was not, indeed, revived in any official form until the unsuccessful propositions of 1865 were discussed by the Royal Geographical Society, after Hall had again sailed. Had he not been sincere in his statements that his object was primarily the relief of Franklin's party, he would hardly have laid this stress upon the hope that other expeditions would come out from England for the same object.

His private note-books and diaries are trustworthy witnesses of the influences under which he brought his thoughts during this period of study and personal preparation. The following selections are taken from one of these books, which contain chiefly extracts and careful references to scientific authorities:

Our greatest glory consists not in never falling, but in rising every time we fall. * * * The question is not the number of facts a man knows, but how much of a fact he is himself. * * * Great personal activity at

Henry Dimmock

From a photograph in the possession of Charles H. Grundy, Esq., New York.

Heliotype Printing Co., Boston.

times and closely sedentary and severely thoughtful habits at other times, are the forces by which men accomplish notable enterprises. They mature plans, after which, with energies braced to their work, they move to the easy conquest of difficulties accounted formidable.

Some of these apothegms copied from a rare volume loaned to him by his friend Mr. J. D. Caldwell, of Cincinnati, are found emphasized for his own impress by being underscored almost word by word; nor did he fail to note at length in his diary the sentiments of Professor Henry expressed in his communication to the Board of Regents of the Smithsonian Institution in 1857 in regard to his discoveries in electro-magnetism, that "he had freely given the results of his labors to the world, expecting only *in return to enjoy the consciousness* of having added to the sum of human happiness." He noted down also the sentiment expressed by Smithson himself, that every man is a valuable member of society, who by his observations, researches, and experiments procures knowledge for men.

To the encouragements offered by more able and influential friends were added those from Captain Budington and his wife, whose kindly messages from their humble home in Groton, Conn., were frequent, and were plainly effective on his spirits and on his labors. These at this time were very arduous. On the 27th January, 1863, he wrote to Budington from his quarters on Fourth street, New York, where he was "near the libraries and Mr. Grinnell:"

> There is such a vast amount of work on my hands that it becomes my duty to ask if it is possible for me to make arrangements by which you can again take the Eskimos into your family. Were it not that I have a book on hand, and also preparation for another voyage in four months from now, I would not ask this.

At Elmira they had taken severe colds, and Hall found he could do nothing but nurse the sick, while in addition to his cares was the

death of their infant *Tuk-ee-li-ke-ta*, born to this Eskimo couple in Rescue Bay, September 6, 1861. He records in his journal his sympathy with the mother, who was herself thought to be near death, but who rallied and attended her child's funeral at Groton. The health of these people was excellent for some time after their arrival in the United States, but the change of food and of climate began sensibly to affect the "icy children of the North."

On the 17th March, 1863, an anxiously-awaited conference was held with Mr. Grinnell and Mr. R. H. Chapell, of the house of Williams & Haven, at which Hall presented the following first notes for his second expedition:

Proposed expedition to Boothia and King William's Land for the final determination of all the mysterious matters relative to Sir John Franklin's Expedition.

I. A vessel of about 200 tons, to be furnished and provisioned for two years and six months, the same to be under my command.

II. This vessel to be fitted out for whaling, the object being to have the whole expense of the expedition paid by the proceeds of whale bone and oil.

III. This vessel to go on or before the 1st of June of the present year, to make direct for the north side (near the entrance of Frobisher's Bay), there to take aboard three or four Eskimos, with their wives, also sledges and dogs; then to make for Hudson's Strait; thence to Hudson's Bay, west side, south of Southampton Island; thence up the channel of Sir Thomas Rowe's Welcome to Repulse Bay.

IV. If whales are found on the way, to secure as many as possible, yet no further delay to be allowed than will admit of getting into Repulse Bay by or on the 1st of September of the same year as starting.

V. If it is judged advisable under certain contingencies for the vessel to proceed at once to other whale grounds than that of Repulse Bay, she must do so after having landed me and my special party and outfit for land service, to wit, for my expedition from Repulse Bay to King William's Land.

VI. Three men from the States to be my special party, to wit: Walter Grinnell, of New York; Frank Rogers, of New London, Conn., and William Sterry,

of Groton, of the same State; also, to be of the same special party, the Eskimos Ebierbing and Too-koo-li-too, whom I brought to the States, the latter to be my interpreter.

VII. Sterry and a part of the natives I take from Frobisher's Bay, to be left at the head of Repulse Bay, in charge of a depot of provisions to be established there. Furthermore, the duty of Sterry and the natives to hunt and capture seals and walrus, and barter with the natives around Repulse Bay for walrus ivory, Polar bear, fox, wolf, and other skins, for the benefit of all concerned.

VIII. A cheap frame house, to be constructed (portable) here in the States, the same to be landed at Repulse Bay, and to be used there for storing provisions therein, and also as a residence and for headquarters. (Such houses are now used by whalers in Northumberland Inlet.

IX. *Providing such an emergency arise that I should be obliged to retreat* from Boothia and King William's Land and seek provisions, and also for a place to recruit, I should be certain of finding the same at all times at Repulse Bay depot.

X. Occasionally to send an Eskimo friend, with sledge drawn by dogs, from Boothia and King William's Land to headquarters at Repulse Bay for anything that I might require. Without doubt I shall have occasion to send to Repulse Bay many packages of relics I may find of Sir John Franklin's Expedition. If I have the great good fortune to discover the Ships Erebus and Terror's papers, it will be my duty to accompany the same in their *transport* to Repulse Bay. *After securing these as treasures of untold value* to the civilized world, I am then to return to King William's Land and Boothia and prosecute the search. Should I be still more fortunate, and should I find living among the Eskimos one or several of Sir John Franklin's men, my heart, overwhelming with unspeakable joy, will direct me then and there what is best to be done.

XI. Provisions of the most condensed character, such as pemmican, Borden meat, biscuit, desiccated meat, and vegetables, to be provided for the Repulse Bay depot; also, a proper quality of flour, sea-bread, ammunition, guns, astronomical and other instruments, medicines, clothing, a Haklet boat, &c., &c., including proper articles for bartering with the natives and for compensating the services I may require of them; perhaps it may be well to add wood and coal to these articles, the same to be used as fuel at Repulse Bay headquarters.

XII. By establishing headquarters at Repulse Bay as indicated above, having there a whale-boat strongly constructed, and having there also Frobisher Bay Eskimos, *there need to be no hinderance to the force employed on the vessel from prosecuting to the fullest extent* that branch of the expedition, to wit, whaling.

XIII. Should such success be met with that the vessel becomes filled with whale oil and bone before I have completed my research for the object and at the point designed, the same to be reshipped by some other vessel to the States, or the vessel to be sent home, taking along my dispatches and such relics as I may have recovered; said vessel to sail from the States the following spring for Repulse Bay.

XIV. The whole expenses of the expedition to be paid from the proceeds of the whaling branch, providing the amount warrants it.

XV. The expenses of the research department to be included in the first cost of the vessel, outfit, &c.

XVI. This expedition to be known as "The Franklin Research Expedition"; the minor details of it only to be understood by the parties most deeply interested.

XVII. By having a boat's crew at Repulse Bay headquarters shore-whaling could be prosecuted. One boat's crew might be made up of the natives. The policy of adopting this scheme could be determined on acquiring information of the natives at Repulse Bay whether or not it is a good whaling ground.

Mr. Grinnell and Mr. Chapell approved the general ideas presented in this plan. It will be observed, however, that the returns for the proposed outlay were to be looked for from successful adventure in whaling, in which feature Hall was encouraged to place confidence by conversations held a short time previously with his friends in New London. The outlay would involve the sum of $20,000, and the first ideas entertained at the meeting just named, limited the contributions for this object chiefly to the generous co-operation of Mr. Grinnell, Messrs. Williams & Haven, and Mr. Chapell. Notwithstanding their unquestionable sincerity and their mutual confidence in Hall, of whom Mr. Grinnell, at this meeting, said, "He is the man of all the world to be sent forth on the mission to solve the mysteries enshrouding the fate of Franklin's men," it could hardly be expected that these enthusiastic hopes of immediate equipment could be realized. Mr. Grinnell had spent between £20,000 and £30,000 on the Franklin Relief Expeditions, and had already met with commercial reverses during the war,

amounting, at that date, it is believed, to nearly $500,000. It was no time for either of the commercial houses to take risks.

Ten days later, Hall drew up in detail six new plans, differing in their estimates and in the question whether the vessel of the expedition should be employed in whaling or in exploration only. On the first of these, which contemplated exclusively the search for Franklin's party and the object of geographical discovery, he indorsed, "If there were a possibility of raising the amount of $20,000 involved in this plan, it should be accepted and carried out"; on the second, which he called "The Combination Research and Whaling Expedition", he indorsed, "Taking into consideration all the circumstances of the times, I believe this the most *feasible*." He strongly expressed himself, however, as unwillingly converted to the idea of the second plan, considering it distasteful to unite the object of whaling with the search for Sir John Franklin's party.

Submitting the first plan to Mr. Grinnell as one to be exclusively in his name and at his cost, Hall received the unavoidable reply that he did not feel that his means would justify his investing the amount indicated.

The four last propositions dispensed with the idea of providing a special vessel, and differed within themselves chiefly in regard to the numbers of the party who might go out in a whaler. Among many offers from those who proposed to share his voyage, was one from Mr Washington Peale, an artist of New York, whom Hall would gladly have had to accompany him. The sixth memorandum, which he called his "Last Alternative", provided for his going out *alone* in a whaler and being landed wherever the natives should be met with, to

make his way as best he could to Repulse Bay and thence to Boothia and King William's Land.

His journal entry about this date, made after a series of disappointments during the day, has the significant paragraph: "Again I may say the want of luster on my habiliments precludes me from interviews with those from whom I would gain knowledge; not so of Mr. Grinnell; he knows I am poor, and yet he always treats me as if I were rich." It may here be noted that while Hall made like honorable exceptions in connection with the names of other generous friends, there is evidence that his scanty means at times produced the erroneous impression on the minds of some that he was an ignorant person. He felt the lack of what, he says, makes men worthy of respect in the eyes of many.

But although lacking in the culture that a collegiate course for which he had been prepared would have conferred, Hall had the advantages of a New England academic education, built upon the qualities of strong common sense, industry, and perseverance, and these had fitted him to grasp the subject he was pursuing. It ought further to be said that the ship captain with whom he sailed on his first voyage, unhesitatingly declared that he had made himself a fair navigator on the outward course, having availed himself of what opportunities he could command for receiving practical instruction in New York before sailing. On his return he had presented to Mr. J. Ingersoll Bowditch the corrections of a number of typographical and other errors in "The Navigator," which were adopted in the subsequent editions, in regard to which corrections he had replied to an inquiry from Mr. G. W. Blunt by saying that "he had made them while working through Bowditch during a winter in the igloos." For reposing con-

fidence in his plans, his friends, therefore, had reasons at this time seemingly as solid as those which, at a later date, prompted the learned members of the National Academy of Sciences to say in their instructions for the Polaris Expedition—

> We have, however, full confidence not only in the ability of Captain Hall and his Naval associates to make important additions to the geography of the Polar Regions, but also in his interest in science and his determination to do all in his power to assist in determining the scientific operations.

If he was enthusiastic in the extreme, there was some method in his enthusiasm. It marks a strongly determined purpose that he should write in his private journal, in connection with his feelings as quoted above—

> I may record my opinion that I cannot succeed in getting the necessary co-operation of my countrymen to carry out my proposed expedition. God only knows my struggles. But, single handed and alone, I will yet accomplish my purpose—for I know it is a just and noble one—or die in attempting it. I will, if possible, get passage for myself, Ebierbing, and Too-koo-li-too in June next to Frobisher Bay. By degrees I will push northward and westward till I reach Ig-loo-lik, and thence to Repulse Bay, and in time to Boothia and King William's Land, the Meta of my aspirations. By this route it will take me three years to to reach King William's Land, three years to return—in all I shall expect to be absent ten years.

His two cherished objects were to be as steadily pursued if he went alone as they could be were he fully equipped; and he was encouraged in the idea of securing substantial benefits to American whaling interests by the replies received from New London, then vigorously pursuing that branch of industry. His inquiries of the whaling firms of that city had been in relation to the value of the whale oil and bone brought home in American ships from Davis Straits, Northumberland Inlet, and Hudson's Bay.

Writing to Mr. R. H. Chapell, he said:

You know the value of exploring expeditions, how they opened up the Spitzbergen whale-fishery, and those of Davis Strait, Baffin's Bay, and Hudson's Bay. I am greatly in hopes of demonstrating to you on my proposed expedition that a channel exists north of Hudson's Strait and running eastwardly from Fox Channel, which will be found to abound in whales, and through this channel an American passage to Hudson's Bay will be found, the right to which England can never question. The great area of our commerce should not be allowed to go down.

He received the following reply:

You ask of me some information relative to the important and growing branch of the whale-fishery now prosecuted by American vessels in the waters west of Greenland and Baffin's Bay. Within the last six years this new ground has opened up a new and fruitful field for the enterprise of our hardy seamen. From 1846 to 1852 but one American vessel fished in these waters. She made six voyages, taking in all about 3,500 barrels of oil and 51,000 pounds of bone; and from 1853 to 1858 five different vessels returned from these waters bringing 75,000 barrels of oil and 115,000 pounds of bone, worth $130,000.

Owing to the dangers of ice navigation and want of knowledge of the country, the business on the whole had not to this time been profitable to those who prosecuted it. Since 1859 more energy has been displayed and greater risks incurred in following this trade. In 1860, two fine ships were fitted out from Fair Haven, Mass., at a large cost, for the express purpose of pushing still farther west toward Fox's Channel or Hudson's Bay, where no American vessel had ever been, in search of a new and better whaling ground.

Without accurate charts, in waters totally unknown, among much ice and strong currents, in short days and long nights, in fogs and gales of wind, with large compass variations, these adventurous navigators pushed their way and reached the longitude of 90° west, spent a winter there, when the thermometer fell to 60° below zero, obtained cargoes worth some $60,000, and returned to the United States in 1861.

At the present time there are *fourteen* American vessels engaged in whaling in these waters. Seven of these have passed the last winter there, and will be expected home the coming fall with cargoes worth nearly $400,000.

In the prosecution of this business we need, very much, *good charts*. The

best I have ever seen were drawn by some of the intelligent Eskimos,* to whom the ships are often indebted for acts of humanity and kindness. The latest English charts and the reports of the Eskimos say that a new channel can be found leading from Baffin's Bay to "Fox's Furthest"; could this be proved by actual passage it would be of great use to our ships. I wish you every success in your proposed voyage, and have no doubt that it will redound to the advancement of business interest of our merchants and the enterprise of our people.

Very truly, yours,

R. H. CHAPELL.

Contemplating a lengthened residence in the localities visited by the whalers, Hall expressed his purpose to reach all such as would appear to be promising for the extension of the whaling interests.

How near at this date he sanguinely supposed himself to have arrived towards the maturity of his arrangements for setting out, may be learned from the letter which follows. It was addressed to one who had more than once expressed much interest in his plans, Prof. A. D. Bache, the distinguished Superintendent of the United States Coast Survey:

JUNE 5, 1863.

DEAR SIR: Your favor of May 22d was duly received. I have transcribed a few lines from it: "If you will give a brief outline of your plan and state what observations you intend to make, and what instruments you have not, I will try as an individual to aid you, and I think that Professor Henry will do so too."

In reply to this I will say: It is now arranged that I leave the port of New York on or about the 1st of July next, in a vessel of one hundred tons, the vessel specially selected and strengthened for ice navigation. On reaching the north side of Bay of Frobisher, lat. 62° 33′ N., long. 65° 00′ W., I take aboard four (4) additional Eskimos (I have now two (2) with me). These Eskimos are to be my

* For some sketches of coast line drawn by Eskimos for Hall, see chapters xii to xiv, 1866–'69. For statistics of the whale-fishery of the region referred to, see Report of Prof. S. F. Baird, U. S. Fish Commissioner, for 1875–'76, and U. S. Consul McDougall's tabular statements, Appendix No. VIII of this Narrative.

auxiliaries in connection with the few whites that go to make up my ship's company.

From Frobisher's Bay I drop down to Hudson's Strait, and sail westerly and northerly to the meridian of 72° west of Greenland, north side of said strait, and here commence explorations, getting data for filling up the now blank on the English and American charts between the meridian named and 75° west longitude. Between these meridians I shall find an extensive inlet trending north. This discovery will prove of great value to our commerce, as this inlet abounds with whales of the Mysticetus kind. I gained the information relative to this bay and its inhabitants from the Eskimos I met when exploring the so-called Frobisher Straits, which, you know, I determined to be a bay.

This part of the coast completed, I pass to Fox Channel. On arriving to "Fox's Furthest," lat. 66° 50′ N., commence exploration and continue it to the Strait of Fury and Hecla. From Eskimo reports, I shall find a strait of great importance, for it is wide and abounding with some species of whales referred to. *This strait connects Fox's Channel with Davis' Strait.*

If I find the Strait of Fury and Hecla navigable (that is, clear of ice) shall push through it for Gulf of Boothia, and then turn to the north, exploring the west coast of Cockburn Island to the parallel of Bellot Strait. Having made the passage to and through the latter-named strait, shall turn to the south, coasting along the west side of Boothia Peninsula till I arrive to the latitude of King William's Land, the latter being the point of my destination.

On completing my investigations here and on the Isthmus of Boothia Felix, relative to Sir John Franklin's Expedition, I shall make my way for Behring's Strait by way of the Straits of James C. Ross, Dease and Simpson, Dolphin and Union. If I am not able to penetrate through the Strait of Fury & Hecla, shall turn to the south to Repulse Bay, drop anchor, and establish headquarters; *then* from this point, by means of dogs and sledges, and the aid of Eskimos, shall make journeys to Boothia Isthmus and King William's Land. The voyage I propose to make will extend over three years.

Respectfully,

C. F. HALL.

The sanguine hopes expressed in this letter were, however, again to be disappointed. It is unnecessary to detail the continued embarrassments and rebuffs which brought this result; they had nearly culminated when Hall made the journal entries which have been quoted.

His insurmountable difficulties at the time may be referred to in brief as these:

Although, at the instance of Judge Daly and of Mr. Waddell, the secretary of the American Geographical Society, its council had made two efforts to hold a conference with the Chamber of Commerce of New York to indorse the plans referred to, and secure pecuniary assistance for them, it was found impossible to get together a quorum of the Chamber for a hearing. A second disappointment was met with in the failure to secure, either from the Navy Department or from the Smithsonian Institution, the loan of instruments for the expedition. The Navy Department did not feel authorized to loan the public property for use by a private expedition. The Smithsonian regretted that the magnetic apparatus furnished to Dr. Kane had been afterward lost in Mexico; and in communicating this information added that "scarcely any results could be obtained, unless some one properly educated for the business of observation should devote his whole time to the instruments." The Institution inquired at considerable length whether Hall would not find it in his power to make extensive collections in natural history, as it possessed but little on that subject from Northeastern America.

Hoping for assistance by a grant from the Chamber of Commerce or by the City Council of New York, and encouraged by some donations, Hall had anchored at the wharves of the city, on the same day, The Active, a schooner offered at a low price by his New London friends, and a yacht, presented by Capt. H. Robinson, of Newburg, N. Y., for the strengthening of which latter vessel lumber had been also contributed in Newburg, and a further most generous offer had been made for its equipment by Messrs Poillon, of New York. He

had also made an arrangement with Messrs. Harper, the generous publishers of his forthcoming "Researches," by which he had leave to postpone further work upon the volume until his return from his proposed voyage

But the local embarrassments and the excitement growing out of the opposition to the enforcement of the Registration act, passed to secure the necessary enlistments of soldiery for the existing war, appear to have entirely withdrawn attention from all subjects of less moment than the engrossing war-topics, and to have closed off the increase of private contributions. Hall had met more than one citizen able and willing to put good wishes into the form of that practical aid for which New York is well noted; but they were restrained by such feelings as Horace Greeley expressed in strong terms when he said to him, "No other idea should now be entertained by any man who loves his country except crushing the rebellion; when that is accomplished one might take hold of an Arctic expedition." The New London schooner was, therefore, returned to her owners, and the yacht Victoria, with the lumber contributed by Mr. John Biglow, was sold, that its proceeds might be invested for use during the next available season. The time necessary for preparing an expedition for the year 1863 having now passed away, Hall, thus hopelessly hemmed in by obstacles as insurmountable as the ice-masses he had left two years before, devoted himself laboriously to the completion of his book, and issued the following card:

NEW YORK, *July* 10, 1863.

To my Countrymen:

While on my Arctic voyage of 1860–'61–'62, I planned another expedition for 1863. On returning to the States last September (1862) I stopped at St. John's, Newfoundland, and there first learned that my country was engaged in war. At

once I felt there could be but slight hope of resuming my Arctic explorations at the time proposed. Arriving in the States, and spending a few weeks among friends devoted to Arctic explorations, I came to the conclusion to spare no exertions in preparing for my second expedition to the Arctic Seas. In my struggle to make the proper preparations I have labored long and perseveringly, the results ofttimes appearing hopeful of my ultimate success. I need only to refer to the stupendous obstacle (the American war) that has been constantly before me during all my labors; for the subject is absorbing the attention of the whole civilized world. I deeply regret to say that, owing to the want of sufficient means and the lateness of the season, I am now compelled to postpone my expedition till next year. In the mean time I shall proceed to prepare my narrative of my late voyage (1860–'61–'62) for publication, and at the same time take such steps as will insure the necessary aid for my expedition to the Arctic Regions, now postponed to the spring of 1864.

Hall's feelings in regard to the labor called for upon his book will be learned from a single expression in a letter of October 20, 1863: "I have been deeply engaged for weeks and months upon my chart, and yet am not done with it. I had rather make a dozen voyages to the regions of ice and snow than prepare one book for publication. I fear that months will be used up before I get through with my book";—words which may recall a like saying accredited to Dr. Livingston, that he would rather again cross Africa than write his Expedition to the Zambesi. Kane, too, had said that the writing of his book was his coffin. Close application was, however, given to the "Researches." It was all that Hall could accomplish during the year.

In the early part of the spring of 1864 direct efforts were renewed, but an application made to the legislature of the State of New York for an appropriation of $25,000 and an appeal to the Council of the city were alike unsuccessful. On the 5th of May, by invitation of Rev. Dr. R. Storrs, President of the Long Island Historical Society, Hall

gave a conversational lecture on his Arctic experiences and his proposition for a new expedition. The Eskimo family were present in their Arctic costume. The repetition of the invitation to lecture shows that the vote of thanks passed by the Society was designed to be more than a mere conformity to usage.

Subscriptions soon after this began to be offered, and the following card appeared in the leading newspapers of the city:

TO THE PUBLIC.

Capt. C. F. Hall, who twenty months ago returned from a two years and four months' exploration of the Arctic Region, intends to set sail on the 15th of June for another and more thorough voyage of discovery. During his former voyage he lived among the Eskimos, acquired their language, and satisfied himself that he can live with these people in safety and health. He is prepared as no other explorer has been before him for making a thorough investigation of the important portion of Arctic land and water to which he proposes to devote himself.

This region still holds an important portion of the secret of the ill-fated Franklin Expedition, which our countryman confidently expects to lay bare. It is, moreover, of value to our whaling and sealing interests, and the reports on its natural history will possess scientific value. These considerations, which have led him to devote the best years of his life to Arctic research, induce also those whose names are appended to this notice to ask their fellow-citizens to join them in procuring for the brave explorer such an outfit as shall set him fairly on his way, and enable him to perform thoroughly the task which he has set for himself. Our countrymen have won an honorable fame by their courage and endurance in Arctic research. It is, therefore, not fit that one who has already shown such perseverance, fortitude, and ingenuity in his previous voyage as Captain Hall has done, shall be permitted to leave our shores lacking anything which can further his laudable object. The proposed exploration has enlisted the sympathies of our most prominent scientific men, especially geographers, as well as enterprising whaling firms. It should be understood that Captain Hall takes with him no sailing vessel, but on arriving at the scene of his labors will leave the ship which bears him there, and trust to the hospitality of the Eskimos.

Jas. Carson Brevoort, 1863.

From a photograph.

Heliotype Printing Co., Boston.

He believes that the acquisition of the log, chart, and scientific documents of the Franklin Expedition, which he hopes to find, will be of great importance; that probably the most extensive series of observations on terrestrial magnetism had been made by the expedition before they abandoned their ships. He expects to return in about three years.

In order to complete the outfit, a sum of about $3,000 is yet required, and while it is Captain Hall's intention to sail at any rate, whether thoroughly fitted or not, it is hoped that our public-spirited citizens will not permit this intrepid explorer to depart from our city lacking anything which can help to preserve his life or enable him to perfect his explorations in the inhospitable regions to which he is bound.

Subscriptions in money, or donations in kind of supplies, or goods for the expedition, may be handed to any of the undersigned, who will see that they are properly applied in aid of this praiseworthy enterprise.

J. CARSON BREVOORT.
JAMES W. BEEKMAN.
A. W. BURR.
HENRY GRINNELL.
E. & G. W. BLUNT.
JOHN AUSTIN STEVENS.

The press of the city of New York in strong language indorsed this appeal, and public sentiment began to show itself, more cordially and favorably. Under the influence of the names cited, and of those of other citizens of high standing, such as Cyrus W. Field, Peter Cooper, Augustus Ward, Prof. R. S. Newton, and Marshall Lefferts, some liberal collections of moneys were secured, sufficient to complete a moderate outfit.

The U. S. Coast Survey Office contributed the loan of a sextant and a dip circle. The nautical and mathematical instrument makers, Messrs. Negus, Stackpole & Brother, Bliss & Co., Tagliabue, Eggert & Son, and Pike & Son, very cordially supplemented the list by donations; while other merchants as readily responded, accompanying their

contributions with pleasant words, and tendering to Hall the opportunity of his own selection from their stock.

Mr. R. H. Chapell, of New London, already quoted as Hall's firm friend, now cordially offered to him a free passage in his whaling brig Monticello, which expected to sail for Hudson's Bay about the 15th of June. In 1860, Mr. Chapell was in the employ of Messrs. Williams & Haven, when that firm so generously assisted Hall by their gift of a free passage in the George Henry. He was now a shipping merchant on his own account. In forwarding his offer to Hall, he wrote, "I shall make no charge or receive any compensation from you for the passage of yourself and Eskimo friends in the Monticello, appreciating your zeal in a good cause, and being much interested personally in all that pertains to the icy regions." In this connection it is proper to state also, from personal testimony of the masters of the whalers belonging to these New London firms, that their contributions were by no means limited to the matter of free passage. Throughout both of Hall's expeditions these vessels, which had their fishing stations and also wintered near him, frequently supplied his necessities, in accordance with the expressed or well-known wishes of their employers. They also took out, gratuitously, supplies sent by Mr. Grinnell and others.

Hall was now ready to sail. On the 30th of June, accompanied by Ebierbing and Too-koo-li-too, he arrived at New London, and was cordially received by its citizens, the proprietor of its chief hotel, with others, extending him full hospitalities. Embarking on the Monticello on the following day, the party were watched by hundreds of people as the ship went down the harbor, and were cheered by the United States gunboats, Iasco and Marblehead, whose riggings were manned

Heliotype Printing Co. *220 Devonshire Street, Boston.*

NEW LONDON ON THE THAMES, CONNECTICUT.

and flags dipped. The Monticello, under the command of Capt. E. A. Chapel, of Hudson, N. Y., was a staunch whaler of 356 tons register, engaged in the whaling business from the date of her being launched, 1842; she carried four large boats, besides her spare-boats and Hall's Expedition whale-boat. She was accompanied by the Tender, Helen F., a craft of about 100 tons, carrying two boats.

Those who bade Hall farewell at this hour of his second departure from home for the execution of his long-cherished purposes, when they left him on their return to the harbor, made this record, "He is full of hope, never desponding; has firm trust in Him who doeth all things well, and is marked for his steady perseverance and integrity; prompt, truthful, and of undoubted reliability, he readily makes friends by his whole-souledness, and those who meet him once are happy to renew the acquaintance."

Hall's own feelings are tersely expressed in a letter written on board the Monticello, July 13, when nearing the port of St. John's. He wrote:

> I have now a work before me that might make some shudder to undertake. It is a great undertaking for one man, I will confess; but, having once put myself in the course, I must and will persevere. I hope by the aid of Heaven to succeed, and at the end of three years I shall return to my friends, who may rejoice that they withheld not in the time of my great need. During the passage to this port I have felt little like work, for I may say it has been the first resting spell I have had for years.

His correspondence was closed by the corrections of the last proof-sheets of his volume on the researches of 1860–'62, the preface to which was dated on board the Monticello. His acknowledgments were again gratefully tendered to Messrs. Harper, who at the time when he had supposed himself ready to return to the North, had

consented to the suspension of the work, although advance payments had been made.* Under the advice of a firm friend, Mr. C. Nordhoff, then one of the editors of the New York Evening Post, Rev. O. H. Dutton had assisted in its completion.

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*A list of the donations received in New York and New London was also sent from the Monticello to the New York press, as follows:

Donations from New York.—Peter Cooper, condensed provisions; G. C. Baker, nautical instruments; H. S. Racket & Son, transportation of powder free to New London on board the schooner Dr. Franklin, S. J. Geer, master; H. Dalley, pain extractors; R. Keith & Co., concentrated medicines; Miles & Holman, hominy, samp, split pease, farina, &c.; Knox, hats; D. C. Morehead, M. D., magnetic plasters; W. S. Moldrum, sugar; G. F. Nesbit, binding journal and books for the Arctic Expedition; Reynolds, Pratt & Co., chamois skins, &c.; T. F. Brett, seine, twine, &c.; Letourneur & Co., pure liquors; Philip Dater & Co., groceries; Colgate & Co., soap; B. S. Osborn, sundries; G. P. Philes & Co., "Coat's Geography of Hudson's Bay," a rare and valuable work; Adams Express Company, kindness of John Hoey, who sent everything free from New York to New London; Guiseppe Tagliabue, barometer and thermometer maker; The Hazard Powder Company; M. P. Brown, importer of beads; W. C. Marshall, condensed meats; Prof. R. S. Newton, M. D., medical stores and surgical instruments; H. W. Hunter, night compasses, &c.; Thomas H. Bate & Co., fish-hooks; The New York Lead Company, Thomas Otis Le Roy Lead Company, and McCullough Lead Company, shot and balls; American Desiccating Company; D. Eggert & Son, chronometer manufacturers; Benjamin Pike & Son, astronomical instrument makers; The American Bank Note Company, journal books of bank-note paper and anti-freezing ink; Samuel L. Mitchell, desiccated vegetables; George C. Hubbell & Co., golden bitters; F. L. Kneeland, Dupont's gunpowder; Lamson & Goodnow, cutlery; J. H. Brower, Borden meat-biscuit; Stackpole & Brother, nautical instruments; Barton, Alexander & Waller, percussion caps, &c.; Annin & Co., flags; McKesson & Robbins, drugs and medicines; Tomes & Sons & Melvain, importers of guns; Theodore Polhemus, jr., & Co., dealers in cotton sail duck; John Bliss & Co., manufacturers and dealers in nautical instruments; J. & J. C. Conroy, dealers in nets; A. A. Low & Brothers, importers of tea; James M. Dietz, lamp manufacturers; Thomas L. Negus & Co., chronometer and nautical instruments; Goodyear's India Rubber Company, India-rubber goods; O. B. Gray, India-rubber goods; E. & G. W. Blunt, nautical instruments, charts, &c.; Conolly & Co., wholesale tobacco dealers; Augustus H. Ward, an order on Tiffany & Co. for a first-class pocket chronometer; telegraph, express, steamboat, and railroad companies for the freedom of their lines.

Donations from New London.—F. L. Allen, drugs, &c.; D. B. Hempstead, fancy articles and jewelry; Sheppard & Harris, clothing; Harris, Williams & Co., hardware; Smith & Grace, tinware; Anson Chace, gun-materials; N. D. Smith, stationery; H. P. Freeman, proprietor of the Metropolitan Hotel, hospitalities.

Chapter JJJ.

FROM ST. JOHN'S, NEWFOUNDLAND, TO WINTER QUARTERS ON THE WELCOME.

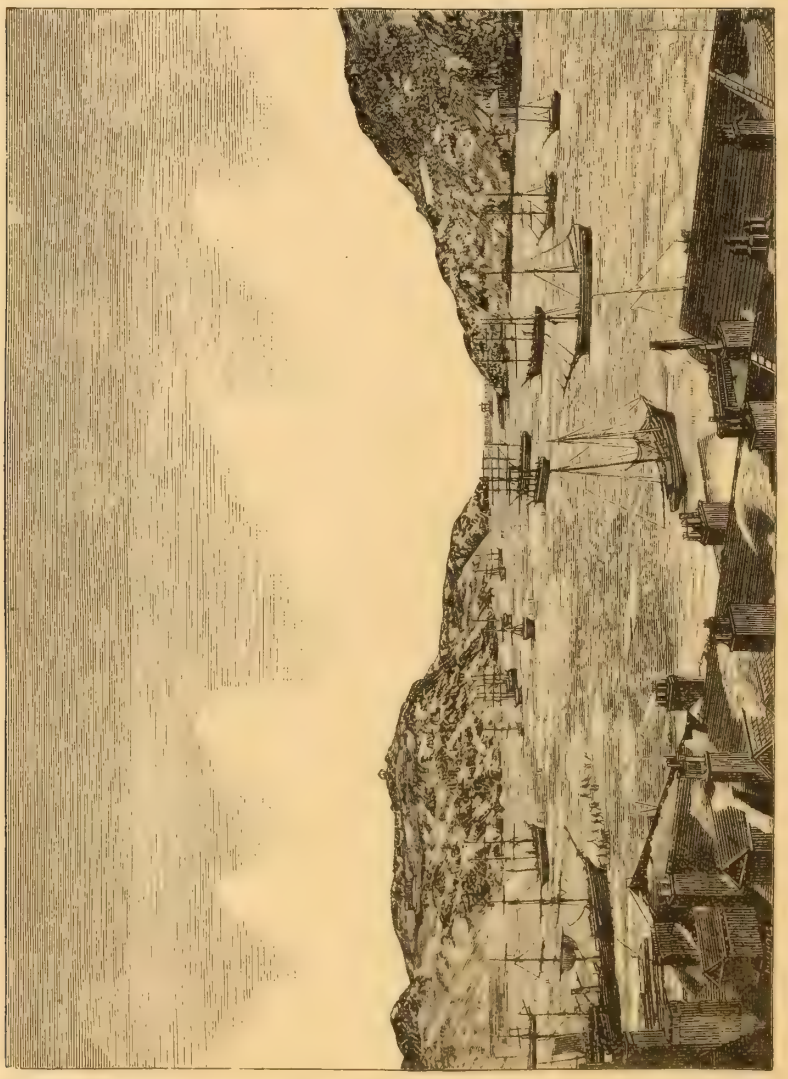
JULY 18 TO OCTOBER 1, 1864.

CHAPTER III.

Arrival at St. John's, Newfoundland—Departure for Hudson's Bay—Passage through the Straits—Exciting capture of two Polar bears—The Monticello lands Hall at Depot Island, and cruises for whales—A white man hired from the whalers—The Helen F. takes Hall's party toward the Wager River; mistakes the latitude, landing them forty miles south—Tents set up and cache made—First meeting with the Innuits from Repulse Bay—Inquiries made of them as to Franklin's Expedition—Change of the season—Removal of tupiks—The Innuits collect their fur dresses—Their frequent visits to Hall's tupik—Snow-drifts—Wolf-tracks—Snow-partridges—Construction of an igloo—Winter quarters.

Captain Chapel expected to reach St. John's on the 13th, but heavy fogs and a strong north by east wind, with rain following, compelled the ship to lie off the mouth of the harbor for several days; further delay being occasioned by the difficulty experienced in shipping the complement of the crew. When the captain went ashore for this purpose, Hall accompanied him, and during his stay until the 18th was the recipient of many tokens of kindness from the citizens, among whom were friends of his first expedition. His letters to Mr. Brevoort, Mr. Grinnell, and others speak with thankfulness of these attentions, and especially of those shown by U. S. Consul Leach, in securing for him further necessary additions to his outfit. They exhibit some

natural restlessness under the unexpected delay of sailing. With the expectation of dating his next letters from Hudson's Bay, he succeeded in leaving St. John's on the 18th of the month.



HARBOR OF ST. JOHN'S, NEWFOUNDLAND, VISITED BY HALL ON EACH OF HIS THREE VOYAGES.
(From a photograph furnished by U. S. Consul Molloy).

Icebergs were first met in lat. 50° 48′. On the 28th, at 9 a. m., Cape Chidley and Button Islands were in sight, and later in the day Hudson's Straits were entered. The Monticello shaped her course for

Resolution Island, known by the Eskimos as "*Todjon.*" Much floating ice was passed through. Hall improved the delay in the ship's course by taking the bearings of the prominent headlands along the shores of the old "*Meta Incognita*" of Queen Elizabeth. Across the strait through which they were sailing lay to the north his discoveries of the Frobisher relics in 1862.

From the first of August to the 20th, the ship and her tender passed through the changing experiences of Arctic navigation. Her course was kept within fifteen to twenty miles of the land. The first days of the month were calm, offering opportunities for securing game on the ice-floes which studded the strait. Hall and Eskimo Joe shot a number of *okpas*, the white web-footed sea-fowl so often found clustering on Arctic cliffs. The *petularks*, dove-kies, proved too shy. Seals were seen at a distance.

Grinnell Glacier—first seen and named on Hall's visit of August 21, 1860—mirrored itself in the spaces of open water. It faded from sight on the bright morning of the 7th. The long and uniform range of white mountains on the north, the Terra Nievia of the old navigators, arrested the attention of all on board the Monticello.

The ship's log of each day, as would be expected, showed much the same record. For a few hours she worked onward under something of a favorable breeze; or else it was tack, tack, one hour on one course and the next upon the other, the wind dead ahead. At times she bored her way through the pack ice, or she met an impassable barrier athwart her course, and then made fast to an iceberg or floe, tying up thus usually at night. While very slowly nearing an ice island on the evening of the 1st, her iron-plated bows had struck

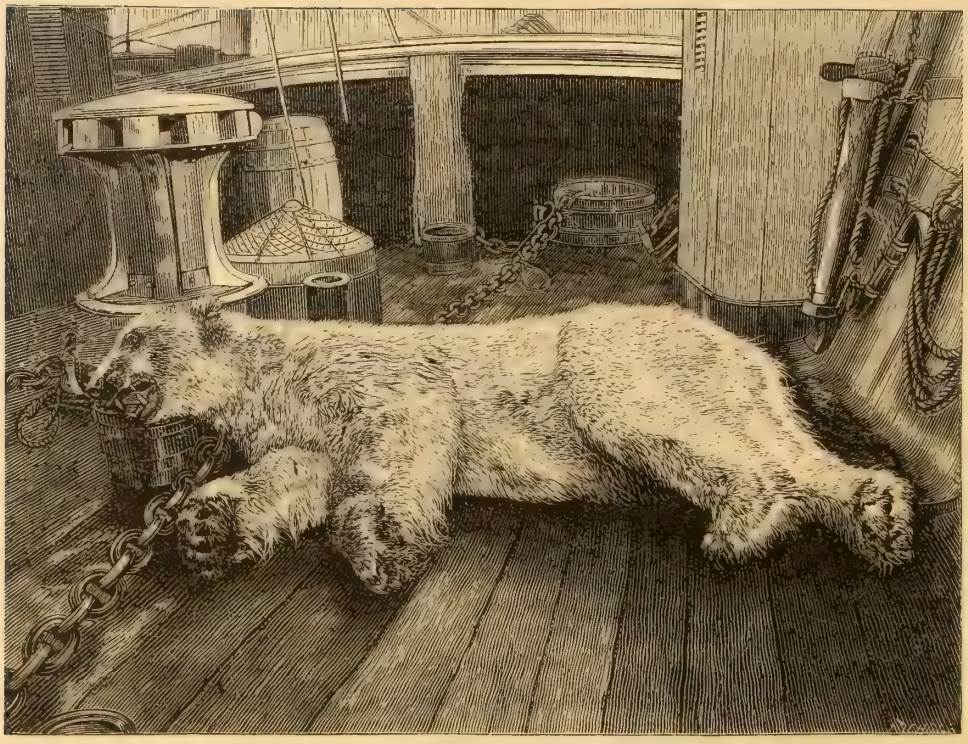
so heavily on a hummock that her crew were in waiting to jump from her. On the 16th, a gale springing up from the north and veering to the northwest, forced the Monticello under close reef, splitting the topsail, the sea sweeping the decks.

During the intervals of fair weather the American whalers had the pleasure of exchanging courteous visits with three of the ships belonging to the Hudson's Bay Company—the Prince of Wales, with seventy-five passengers on board, the Prince Arthur, and the Ocean Nymph. These vessels had left Stromness, in the Orkneys, on the 2d of July. One of them had been within the straits six days. They had all been sighted at a short distance to the westward the evening before the visits, the opportunity for which was occasioned by the dead calm which had detained them.

Hall's voyage was not long without the excitement incident to the sight and chase of the bear and the walrus. Walruses were seen at some distance basking, as is their custom, on the ice. As the Monticello passed near, they raised their ferocious heads to gaze a little while at the ship, and then rolled over into the sea.

The chase of several Polars was of more interest. One seen by the crew of the Helen F., though at first close by, made a most respectful distance before the guns could be loaded; and, although swift chase was given by the dingy, bruin gained a long piece of ice and bounded off upon it beyond all possibility of capture, leaving on the ice, parts of the seal on which he had been breakfasting. The Monticello was more fortunate, securing two large Polars on the same day. Hall's journal of August 3 says that at 5 a. m. he was aroused from sweet slumbers by the voice of Chester, who had come down from his

morning watch "thundering in the companion way, 'White Bear! White Bear!'" In a few moments the glass showed from the deck a huge Polar; and the mate, with Hall and Ebierbing, started with a stalwart crew, who were quickly over the ship's side. Chester steered, Hall and Ebierbing, with loaded rifles (the gifts of Mr. Chapell, of New London), were in the boat, and five pairs of oars "pulled lustily as for dear life." Bruin was nearly a mile off, but though every effort was made to keep to the leeward, he showed that he scented his pursuers when they had passed over but a fourth of that distance, by his shuffling to and fro on the ice and by throwing up his head, shaking it at them, roaring furiously, and showing his tusks; with intervals of quiet gaze at the boat. At the outset, Eberbing pronounced the animal to be one of the largest of its kind, and a male; calling it an *Anjujua* Commenting in his journal on the acuteness of the Innuits in discriminating the signs and habits of the animals of their country, Hall notes Ebierbing's quickness in deciding the sex and character of this bear from its size and its yellowish-white color. He showed further tact by frequent lusty shoutings, in order to arrest the progress of *Ninoo* after he had dropped himself stern foremost into the water, and had commenced swimming at the rate of full six knots an hour. *Ninoo* by his delay in turning around nearly his whole huge body gave his pursuers much advantage. At the distance of 50 yards, on Ebierbing's making the first shot at his head, which alone was above water, Polar instantly dropped, and his huge carcass floated lifeless. The crew, making it fast, towed it back to the Monticello within thirty minutes from the time they had set out on the chase, and in a few moments more, with pulleys and hemp, landed him safe on deck.



POLAR NO. 1.

Hall proceeded to sketch the animal and to note his measurements, the chief of which were:

Weight, estimated by Chapel, Chester, and Hall	1,100 lbs.
Length from snout to tail	8 ft.
Length from snout to shoulder joint	3 ft.
Length from heel of hind leg to top of rump	3 ft. 5 in.
Circumference of the head before the eyes	3 ft.
Circumference of the neck	3 ft. 8 in.
Circumference of the middle	7 ft. 4 in.
Circumference of the fore leg below the knee and of the fore paw, each	2 ft. 3 in.
Length of the tail	5½ in.
Length of front teeth	7 in.
Length of molars	4 in.

[Barentz, in 1596, killed two bears on Cherie or Beare Island, near

Spitzbergen, the skin of one of which measured 12 feet, and of the other 13 feet.]

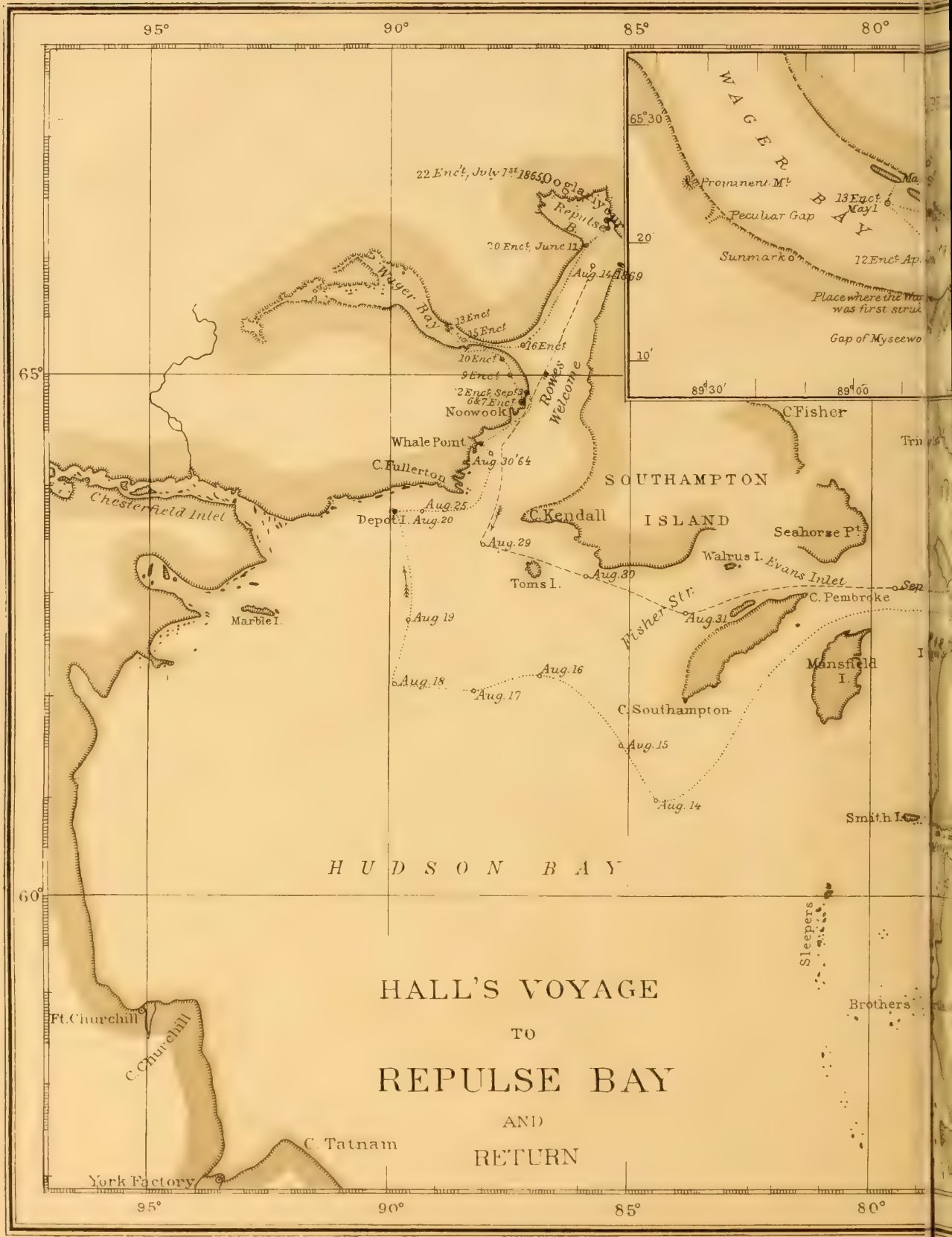
Ebierbing scarcely gave himself time to finish with the assistance of two of the crew, the work of skinning and cutting up this animal, before he was at the ship's side, glass in hand, on the sharp lookout for a second. At 2.30 p. m. he espied one fast asleep about two miles distant, and Captain Chapel consented to the delay of luffing and again sending out a crew, as he found the ice closely and heavily packed in the ship's way. After a pull of two miles the same party approached their new game—this time within thirty yards—and Ebierbing was again the first to fire. *Ninoo* No. 2, however, took to his heels and was soon out of sight beyond the hummocks, and, as the floe was quite large, it was scarcely to be expected he would be again seen. But the crew, by sharp pulling, reached an open-water space on the opposite side, and, on inspecting closely every piece of ice, at last espied *Ninoo* standing erect facing them, pawing the snow, and fiercely roaring. Ebierbing again fired and again the animal bounded into the water. Heading him off, and following closely through the floes, the marksman fired ten more shots, but still without fatal effect. At times springing upon the loose pieces of ice, and again spurning these with his feet as he plunged into the deep, the animal at last rested on his haunches on a hummock, his whole frame quivering from the effects of the shots. He struggled hard with death, at one moment sitting up, with head erect and quiet, and the next striking it in the most terrific manner first with one paw and then with the other; and roaring till, as Hall says, "the very ice mountains seemed to quake." But Ebierbing, by a well-directed shot at the brain, ended this second piteous scene, and, advancing cautiously and touching the carcass with his ramrod, pronounced the bear dead, though

no sooner had he said it than *Ninoo* gave one more convulsive leap. He then fell lifeless.

The number of shots fired is not beyond what is usually found necessary. Hall, recalling the experiences of his first voyage, says he had sometimes thought that the bear exemplifies the old saying of the cat's nine lives, for ball after ball is often put through the head, and the bear drops down as often seemingly lifeless, yet in a few moments off again he trots.

Polar No. 1 was found to be immensely loaded with fat, "covered with a complete blanket of it, five inches thick on the rump; the entrails entirely encased with fat." The paunch was empty. This Ebierbing explained by saying, "When *Ninoo* get fat he no eat any more for two or three months;" an empty paunch is, therefore, no sign that he is hungry. The skin, the fat, and the meat were saved. The whole of the inwards, except the fat covering, was thrown into the sea The Innuits never eat anything from the inside of the bear. Steaks of juicy, red meat were welcomed by the crew, and Hall says better beef could not be had in the States. These last remarks accord with what Scoresby, in his Account of the Arctic Regions, says, viz, that he once treated his surgeon to a dinner of bear's ham, and he knew not for a month afterward but that it was beefsteak. The liver is hurtful, while the liver and flesh of the seal, on which the bear chiefly feeds, are nourishing and palatable. Sailors who have inadvertently eaten the liver of the bear have sickened; some have actually died. These ill effects have not, however, been always the experience of Arctic sailors.

The amount of oil obtained from the two bears was over seventy gallons; all the blubber was cut up to make it. Usually the Eskimo women do this part of the work, but Too-koo-li-too had never practiced



OUTWARD VOYAGE FROM ST. JOHNS, N
HOMEWARD VOYAGE FROM RE

NFOUNDLAND TO WHALE POINT, 1864.
ILSE BAY TO ST. JOHNS 1869.

it. The oil was sweet and pellucid. By the light from some of it, Hall wrote his next journal entries. In the paunch of the second bear about six gallons of seal-oil had been found.

From the entrance of the straits the course of the Monticello had been run between 60° 59′ N. and 63° 47′ N. The last-named latitude, made August 10, was found to be considerably north of where the ship's dead-reckoning placed her; she had been swept out by the current. From the 7th to the 20th the log gives the longitude reckonings, 69°, 70° 40′, 72° 33′, 75° 08′, 84° 27′, 85° 30′, 88° 40′, 90° 20′, 89° 40′; on the 20th, 89° 56′ W. Compass variation, 41° W.

On the 12th, under favor of a south-southeast wind and a strong current, the ship had made the most rapid advance of any part of her course; Nottingham and Salisbury Islands, which had been on her starboard all day, being suddenly swept by and left far in the distance. It was now learned that the passage of the straits had been much more successfully accomplished by one of the ships of the Hudson's Bay Company, the Prince of Wales, which, according to her log, had made it in less than six days.

Eight days after, the Monticello, having completed her run across the bay, anchored at Depot Island, in lat. 63° 47′ N., long. 89° 51′ W. The Eskimo name of this island is Pik-e-u-lar; its English name had been given to it by Captain E. A. Chapel on a former voyage.

Hall was much disappointed that the vessel did not proceed directly to Marble Island, her original destination. He had hopes of doing some good work there by carefully determining the geographical position of the island, and had a second object in view. Remembering the fate of the expedition under Knight and Barlow, sent out

in 1719, some of the wrecks of whose vessels were found fifty years afterwards upon this island, he wished to explore it for relics of that expedition* which might yet possibly be found. In Hearne's Travels he had seen the statement that the remains of the houses built by this party, as also the hulls of the ship and sloop were visible for many years below the waters.

He was at first landed with Ebierbing and To-koo-li-too on Depot Island. Mate Chester, who accompanied them, estimated the whole weight of his boat and outfit at only 1,400 pounds. The boat, built by Rodgers of New London, was but 28 feet in length, with 5 feet 10 inches beam, and 26 inches depth. The mate and crew returned on board the Monticello, and when, soon afterward, she left the harbor on her first cruise for whales, the party on the island began their five years' Arctic residence. A tent was erected on the western side, and some observations were made for determining the position and for marking out the adjacent coast line. On the 22d, the first game secured, footed up for the day nine petularks and one goose.

During the week which followed, several vessels, and among them the Tender, Helen F., were sighted, apparently working their way up to Rowe's Welcome; and although the fog at one time hid them from view, Hall was only the more delighted to find on the 23d the brig

*Sickness and famine occasioned such havoc among the English that by the setting in of the second winter their number was reduced to twenty; and on the Eskimos visiting Marble Island again, in the summer of 1721, they found five of the English only alive, and those in such distress for provisions that they eagerly eat the seal's flesh and whale's blubber quite raw as they purchased it from the natives. This disordered them so much that three of them died in a few days; and the other two, though very weak, made a shift to bury them. These two survived many days after the rest, and frequently went to the top of an adjacent rock and earnestly looked to the south and east as if in expectation of some vessels coming to their relief. After continuing there a considerable time, and nothing appearing in sight, they sat down close together and wept bitterly. At length one of the two died, and the other's strength was so far exhausted that he fell down and died also *while attempting to dig a grave for his companion.*—(Journey from Prince of Wales' Fort, in Hudson's Bay, to the Northern Ocean, 1767-1772, by Samuel Hearne. Introd., p. xxxi.)

Isabel and the bark Concordia, and on the 25th the Helen F., snugly anchored west of the island. The captains of these vessels went ashore and expressed their kindly interest in Hall's purposes, offering him also comfortable accommodations on their ships if he should complete his work before the expiration of their cruises. Capt. H. Y. Chapel, of the Tender, spent much of the day on Hall's "flag-staff hill," from which he had sighted the ships while making his observations.

He now secured his first assistant. Charles Rudolph, a German, one of the crew of the Isabel, having learned Hall's wish to employ a white man as a companion on the expedition, volunteered to go with him and went ashore for an interview, bearing high recommendations from his officers. He had spent one previous winter among the Innuits. He was very closely questioned in regard to what he knew of Innuit life and what trials he supposed he would have if he went on this intended journey of from two and a half to three years, and his replies were so satisfactory that, taking them in connection with the recommendation of his officers (Mr. Gardner, the second mate, being an old acquaintance), Hall had no hesitation in accepting the proposal. The experience of his First Expedition had taught him that "the man from the land of civilization who should accompany him, must be one whom he well knew, and one that would face disappointments, deprivations of food without a murmur, endure with stout heart storms, cold, and hard labor without flinching, and be truthfully obedient and trustworthy every way." Before setting out, he had refused many applications from persons in the United States and Canada, under the feeling that unless he knew them intimately he might regret having taken a companion when it would be too late for a remedy. It may be remarked in passing that the letters containing such applications found

among Hall's papers and dating within the years 1860–'62, as well as the future history of other like cases, justify the precaution he took.

Before taking Rudolph into his service he told him, in Mr. Gardner's presence, the very darkest and hardest side of the story as to the life he must lead if he went to King William's Land, asking him also if he were aware that perhaps they would starve, or be killed by the Innuits. But Rudolph answered that he could endure what any one else could, and could stand it as well as Hall; and if they should find no chance of escape, a man would have to die but once, and, therefore, he was not afraid to go. A contract was then made for the term of three years, at a compensation of $25 per month, with the promise of a much larger sum if the objects of the expedition should be secured; and to complete the papers properly required in the case, Captain Parsons of the Isabel, received from Hall a copy of the contract, to be shown, if necessary, at the custom-house in New London on the return of the brig.

On the 26th, Mr. Gardner recorded for Hall his observations for the day, which included some lunar distances.

On the 27th, no fewer than eight whalers, the Cornelia, George and Mary, Concordia, Morning Star, Isabel (brig), and Isabel (schooner), with the Monticello, and her Tender, were all at anchor. The officers and men of these vessels very kindly added some useful things to Hall's small outfit, and promised their assistance whenever it should be in their power. The Morning Star, leaving her anchorage for Cyrus W. Field's Bay, received a copy of Hall's chart of Frobisher Bay. The next day the crews of the Monticello and Helen F. were engaged in towing the former vessel to the place selected for her winter quarters.

At 11.30 a. m. of the 29th the anchor of the Tender was catted, and Capt. H. Y. Chapel sailed with Hall, his two Eskimos, and his new employé, Rudolph, under instructions from the captain of the Monticello, to convey them to Wager River. From this point they were to proceed in the boat to Repulse Bay, where Hall expected to winter and prepare for his sledge journey to King William's Land in the spring. Three of the whalers accompanied the Helen F. out of the harbor, one of which, the Isabel, bound homeward, took letters to the United States, including some from Too-koo-li-too to Miss Sylvia Grinnell, (now Mrs. Captain Buxton, R. N.), and to Mrs. Budington.

The Tender left her anchorage with a light breeze from the northeast; but the wind soon veering to the south and freshening, she made from four to six knots per hour toward Cape Fullerton. While crossing an inlet which Hall named after Captain Chapel, he wrote his first Arctic letter to Mr. Grinnell, dating it August 29, lat. 63° 47 N., long. 89° 58′ W.

On the 30th, he left the vessel in Mr. Chester's boat and landed at Whale Point, returning to the schooner at about 4.30 p. m. The next day they had the first sight of whales.

The captain of the Tender now informed Hall that he had reached Wager River, and would, therefore, land him in order that the schooner might return to Marble Island to make her winter quarters. Both Hall and Chester dissented from the captain's judgment that he had reached the river. The first officer, however, insisted that they were opposite its southern entrance. Early in the morning of the 31st, therefore, Chester again took charge of the Sylvia, with her Arctic outfit, and landed Hall with his party at a point which seemed to be, in Chester's judgment, 35 miles, but was afterward determined by Hall from a meridian

altitude to be 40 miles, south of the point which Captain Chapel supposed he had reached. Mate Newman, with a boat's crew from the Tender, assisted in conveying the stores on shore. Hall gives the position of this first landing place as lat. 64° 35′ N., long. 87° 33′ W., "Encampment No. 1."

This mistake of the land was a grievous disappointment. The remaining distance was clearly within the instructions received from the captain of the Monticello, and it could have been readily and safely made. It was more than a disappointment to Hall, for it proved to be *the loss of a whole year to the expedition.* Had the landing been secured at the point proposed on Wager River, he might have gone directly to Repulse Bay, securing there his winter quarters, and preparing, as he expected, for his spring journey. It will be seen that he was compelled to pass his first winter near this first landing, and that it required the larger part of the opening season to push on his boat and stores to Repulse Bay. Whatever, however, may have been the error, and however sore the disappointment, no complaints are found in his journal.

The crews using both sail and oars found a fair harbor a little before meridian, but landed with difficulty because of the falling tide. Hall and Rudolph were in the water waist deep to haul the Sylvia ashore.

A single white man in a desolate region, and at the beginning of an Arctic winter, but a man of a brave heart and of Arctic experience!

The whole of the first day after landing he occupied in making a cache and depositing stores, in order to reduce the weight of the Sylvia's cargo. Such articles as were not needed for immediate use were carefully packed in three deposits under a ponderous pile of

rocks. The chief objects thus cared for, besides his books and the other personal effects of the party, were the cans of pemmican and of desiccated vegetables, sugar, coffee, tea, and tobacco, a small supply of spirits, powder, shot, and percussion caps. Several groups of deer were seen during the day, and Ebierbing killed five of their number, bringing to the encampment, with Rudolph's help, the skins of three with part of the meat, and leaving the remainder in a cache three miles off. The party had thus fresh meat almost immediately on landing.

On the 3d, Hall resumed his voyage to Repulse Bay by coasting along to the northward. Having made about five miles, he found himself completely headed by land which shot directly athwart his course, though he had supposed he should find a channel. It was simply a bay filled with numerous islands. The tide was running furiously before he got out of it, and it was only by skillful management that the Sylvia was free from the eddies, currents, and overfalls that abounded there, and was again in smooth water.

In writing of this to Captain Chapel, he said:

> How shallow the Welcome! Over much of the distance made from the place of my first encampment to second, in lat. 64° 50′ 30″—15 miles—our Sylvia, drawing only 18 inches, often touched bottom a half mile to two miles from the coast. The land on the west side of the Welcome, at no point between the two encampments named, can exceed 30 to 40 feet in height. I have no hesitation in saying that the American whalers who have so successfully been navigating in Hudson's Bay, especially in that part of it called Sir Thomas Rowe's Welcome, since you and your brother Christopher first opened up the whale-fishery in said bay, in 1860, must be as good navigators as the world knows of. This is said with the full knowledge that little or no dependence can be placed on any compasses on board of your ships. Although my azimuth compasses are of the most delicate construction, they are virtually of no use except to show how perfectly fickle and unreliable compasses are in this portion of the North.

Eskimo Joe now sighted with the telescope a place on the land where the Innuits* had had a late encampment, the marks being several tent-poles standing erect. A few minutes later he sighted a boat which was turned over and lying above high water on the land ahead. From this we concluded that the natives could not be far off, and toward this boat the Sylvia was now directed. When within one mile of it we were delighted at the sight of a native near this boat; and yet the joy was mingled with something that was akin to fear, for he appeared advancing cautiously toward us with gun in hand, and at the same time, as Joe thought, loading it. However, I caused my small crew of three to pull ahead, and soon leaped from the bow of the Sylvia into the muddy shallow water and waded ashore. The next moment my hand was in that of noble *Ou-e-la's* (Albert's), as fine a specimen of an Eskimo as ever I met. I told him that but a few days before I had seen you, and that Captain Chapel had brought me and the two Innuits then in the boat in his vessel from my country, America. *Ou-e-la's* joy on hearing from *you* seemed equal to mine on meeting him. He told us that his *tupik*, skin tent, and those of several others of his people, were just over a point of land from where we then were, and that if we would stop and make our encampment there, he and his people would the next day move over beside us and then we all would have a long talk.

* The appellations *Innuits* and *Eskimos* will be used in this Narrative synonymously, as Hall uses them. It may be as well, however, to give the probable origin of the names and their legitimate application. The word Esquimaux—better written Eskimo—is derived from a root indicating, in the language of the Northern tribes, a sorcerer. The Innuit name *Kag-uskeeme* means the house where the *shamans*, sorcerers, conduct their dances and incantations. The word Innuit means *people*, and is in use from Greenland to Bering Strait. It should take the place of Eskimos, the etymology of which is not clear. Mr. W. N. Dall, in a paper read before the American Association in 1869, and in a number of "The Contributions to North American Ethnology" by Major J. D. Powell, makes the following additional valued statements:

"The Orarians are distinguished (I) by their language, of which the dialects, in construction and etymology, bear a strong resemblance to one another throughout the group, and differ in their homogeneousness (as well as the foregoing characters) as strongly from their Indian dialects adjacent to them; (II) by their distribution, always confined to the sea-coasts or islands, sometimes entering the mouths of large rivers, as the Yukon, but only ascending them for a short distance, and as a rule avoiding the wooded country; (III) by their habits, more maritime and adventurous than the Indians, following hunting, and killing not only the small seal, but also the sea-lion and walrus. Even the great Arctic bow-head whale (and anciently the sperm-whale) falls a victim to their persevering efforts; and the patent harpoon, almost universally used by American whalers in lieu of the old-fashioned article, is a copy, in steel, of the bone and slate weapon which the Innuits have used for centuries; lastly, they are distinguished by their physical characteristics, a light, fresh, yellow complexion, fine color, broad build, scaphocephalic head, great cranial capacity, and obliquity of the arch of the zygoma. The patterns of their implements and weapons, and their myths, are similar in a general way throughout the group, and equally different from the Indian types.

"The Orarians are divided into two well marked groups, namely, the Innuit, comprising all the so-called Eskimo and Tuskis, and the Aleuts."

To this proposition Hall readily acceded, and made with this chief and his people at *Noo-wook* his second encampment, the position of which has been already given. It is to be remarked, however, that this position and the succeeding ones which may be named are approximate only. His astronomical observations, reduced from his rough notes under the superintendence of Mr. R. W. D. Bryan, will be found in Appendix I.

The tribe was one whose usual residence was at the head of Repulse Bay. They had often held intercourse there and at Depot Island with the American whalers; had their English names from them, and had in their possession the boats and hunting implements of civilized life.

Hall and his two Eskimos were soon at home among them, Ebierbing and Too-koo-li-too acting from the first as his interpreters, and finding but little difficulty in this, as the difference between the new dialect and that of the Cumberland Gulf people was readily overcome. Hall's first notes speak of *Ouela's* people as one would speak of old acquaintances.

> On the 7th [he says], first came into my tupik *Artooa*, Frank, with his wife and family, with their dogs and their panniers; in the evening, *Ouela* the chief, and *Armou*. *Armou* slept with me, and all the natives shared my breakfast. Frank made me a present of six reindeer-tongues and some salmon.

Going off in the morning on a hunt with *Artooa*, *Nu-ker-zhoo*, and Rudolph, Hall met with both white and black *Tuk-too*—reindeer—and Ebierbing again succeeded in killing two. Returning in the evening he joined heartily with his Eskimo brothers in their first *Ankooting* service, a superstitious ceremony more than once to be noted in these pages, and which occasioned many of Hall's subsequent troubles. His

first inconvenience was the *An-ge-ko's* decree, this day, that no iron should be filed by either *kob-lu-nas* or Innuits till the ice formed.

Armou the next morning, on taking leave, received presents of ammunition, tobacco, and deer-skin mittens; and before the party separated on this day Hall had begun his inquiries as to what these natives might have heard of Franklin's men and what they knew of the geography of the country further north. He says:

I was not long in arriving at the subject which led me North. When I told these natives where I wanted to go, to wit, to I-wil-lik (Repulse Bay), and thence to Boothia, Felix Peninsula (which they call Neitchil-le), to find out all about some *kob-lu-nas*, whites, that went there many years ago, they at once told me that there *were two* ships lost near Neitchil-le many years ago, and that a great many *kob-lu-nas*, whites, died—some starved and some were frozen to death—but that there *were four that did not die!* How astounded I was as Too-koo-li-too (the best interpreter of Innuit language into our vernacular that ever accompanied an Arctic expedition) told me this! Little did I expect so soon to find natives that seemed to know a volume of interesting and important facts bearing on the Franklin Expedition. I had before us a large English Admiralty chart of the Arctic Regions from the meridian of Smith's Sound westward to that of Mackenzie River. They at once pointed out where Repulse Bay was, which they called I-wil-lik, and thence followed the track of Dr. Rae, whom they saw in 1847 and 1854. They showed the locality of where the two ships were lost, and where Neitchil-le is. They pointed out the bay where they themselves were when they heard about the two ships being fast in the ice, and how the *kob-lu-nas* left them, and finally nearly all starved or froze to death. This bay Dr. Rae named Pelly Bay. These natives all told me that I ought not to think of wintering at I-wil-lik (Repulse Bay); that I was too late for killing any *took-too* there, and that no seals or walrus could be killed there in winter. Besides all these objections to my wintering at Repulse Bay, all the natives stated that I could not pass the entrance to Wager Bay and thence to Repulse Bay at this late season of the year with my heavily laden boat without great risk of losing the boat and our lives. Indeed, I could not induce any one of the natives to go with me on account of the reasons now stated. Besides, they said I would not find any Innuits at Repulse Bay, for they uniformly left that part of the country in the fall of the year to spend the winter where they could kill seals and walrus. They stated that it was their own pur-

pose to go to Repulse Bay next season, starting early in the spring, and then to proceed thence to Neitchille, just where I wanted to go; and proposed that if I would spend the winter here at Noo-wook with them, they would furnish me and my small company with all the *took-too*, walrus, seal, bear, and musk-ox meat we wanted; and, furthermore, they would give us plenty of reindeer furs for our winter dresses and bedding, besides helping me in doing anything I desired. Where else in the world could a more free-hearted, generous people be found?

After spending several days with them and conversing seriously on the whole subject, Hall decided, and indeed of necessity, to remain at Noo-wook for the winter. He communicated the information quoted above to Captain Kilmer, of the Ansel Gibbs; that this first news might be safely conveyed to Mr Grinnell, if he himself should never return home.

On the two following days whales were seen close to shore, their backs being above water for nearly a half hour. On the 10th, Hall sent his two Eskimos with Rudolph and some of the natives to his last encampment to bring away his stores. While awaiting their return the feelings awakened by his now isolated situation were thus recorded in his note-book: "I have felt lonely all day, although within a stone's throw are three *tupiks* filled with these kind-hearted children of the North. They have been very kind, some going to the lakelet for water, some getting the dwarf shrub used in these regions for fuel, and some preparing my food."

The experience of his former Expedition having early taught him the helplessness of these poor beings when suffering with sickness or bodily injuries, he was not unprepared to render assistance, and he had early calls upon him from *Ar-too-a* and *Ou-e-la*. The case of one of his patients is illustrative. *Ook-bar-loo*, an old woman, suffering with inflamed eyes, was constantly rubbing them with her

uncleanly fists. Having first sponged off with soap and water "the thick coat of primitive soil" which covered *Ook-bar-loo's* whole face, and then presented her with a piece of cotton cloth for her own use in cleansing her eyes, he received her profound thanks for this application of nature's remedy, with the declaration that he was the best of *An-ge-kos.* This woman remembered that when very young she had staid aboard Parry's ship, and showed tattooing done upon one of her legs at that time by Crozier's men.

The acquaintance made with the Eskimos was now daily improved by inquiries in regard to the expeditions of Parry, Ross, Rae, and Franklin, in order that, by comparing with the official narratives of those officers what could now be heard from these people, Hall could learn what confidence to place in their accounts of Franklin. He was much encouraged by the seeming correctness of their replies. Among these, *Ar-too-a,* whose age was about thirty, gave him a long account of the very serious wounds received by *Ou-lig-buck,* one of Dr. Rae's interpreters. *Ar-too-a's* story, as found in Hall's journal of the day, corresponds closely with the record given by Rae himself of the accidental wound and the healing of *Ou-lig-buck* to be found on pages 95 and 96 of the Narrative of Rae's Expedition to the Arctic Seas in 1846–'47. *Ar-too-a* further said that he and his brothers *Ou-e-la* and *Shu-she-ark-nook* had seen Rae on each of his expeditions of 1846 and 1854, and that "although *Ou-lig-buck,* father and son, and most of the white men smoked, Dr. Rae never did." They all knew Rae's "merry *Ivitchuk.*" Hall was much gratified on receiving such details of incidents which occurred nearly eighteen years previous.

The 15th was a day of gale from the north. The Welcome was lashed into a fury, and the cold winds drove far inland everything

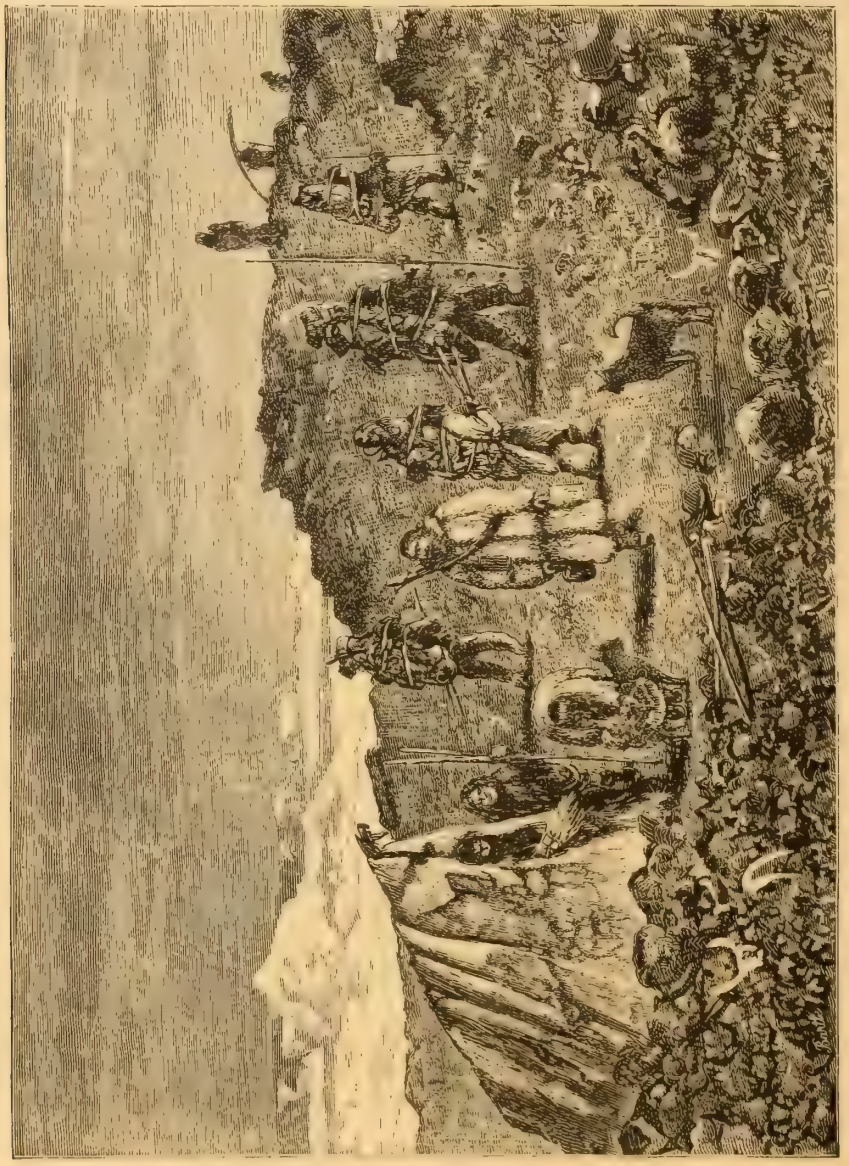
like game, the hunting parties of the day failing to see a single living thing—not even a partridge. The moon was full at $9^{h.}$ $9^{m.}$ Greenwich time. On the going down of the sea, Hall, with his new man Friday, *Ar-too-a*, and Ebierbing, went out in swift pursuit of an *ook-gook* (*Phoca barbata*) which they had seen drifting down with the tide, and seemingly asleep. The Sylvia had been gotten off the rocks by the help of the women. But although the party approached the seal cautiously, the noise of the oars awakened him, and he disappeared. The chief *Ou-e-la*, with one of his wives and a daughter, had early gone off to hunt; the man, gun in hand, carrying on his back a roll of reindeer-furs, his dogs being heavily laden with the provisions and cooking utensils placed on their backs saddle-bag fashion, as is the Innuit custom.

Hall now experienced the beginning of a suffering like one on his first Expedition—the breaking out of boils—brought about by the change of food from the salt meats of ship-life to the raw or partially boiled meats of the Eskimos. The rapid change of the season was also sensibly felt. The nights began to be cold, ice formed on the fresh-water lakes, and there were signs of an approaching snow-storm. He determined to secure a less exposed place for the *tupiks*.

On the 18th, in company with *Ar-too-a*, *Shoo-she-ark-nook*, and Ebierbing, he selected a location for himself and his friends on the east side of a low ridge of rocks, which would serve to shield them from the cold west and northwest winds that would probably prevail for many months to come. His journal says:

> It has been moving-day with us, and an interesting picture might have been seen; the Innuits and the two Kod-lu-nas, with packs on our backs, tramping along toward our destined new home. Old Mother *Ook-bar-loo* had for her pack a monstrous roll of reindeer-skins, which was topped with kettles and pans and

various little instruments used by Innuits in their domestic affairs, while in her hand she carried spears and poles and other things that need not be mentioned



MOVING-DAY.

here. *Ar-too-a* had for his pack his tent and pole, his gun and et ceteras in his hands. His wife had for her pack a huge roll of reindeer-skins and other things much of the character of *Ook-bar-loo's*. The dogs had saddle-bags, and topping

them were pannikins and such varied things as are always to be found in Innuit use. Ebierbing had for his pack our tent and some five or six tent-poles, while in his hands he carried his gun. Charley Rudolph had a large roll of reindeer-skins, in his hands carrying numerous tent-poles. Too-koo-li-too had also deer-skins, and in her hands various things. I carried on my shoulder two rifles and one gun, each in covers; under one arm my compass tripod, and in one hand my little basket, which held my pet Ward chronometer, and in the other my trunk of instruments.

A snow-drift set in on the 20th, but during its continuance about twenty bags of fire-shrub were gathered. It was not the usual Andromeda Tetragona, but something of like character, and was collected for fuel and for a covering on the tupiks.

During the rest of the month a continuance of stormy weather prevented astronomical observations The land began to look winter-like. The tracks of a wolf were now first seen; it had been busy with the bear-skins which had been left to dry near the third encampment. The ground was already covered with snow to the depth of a half inch; the ice on the lakes bore the weight of a man, and the heavy weather on the coast drove inland more of the game.

The Innuits, warned of the necessity for procuring winter clothing, made a journey of five miles down the coast to their deposit of reindeer-skins. On their return, it was a matter of surprise to Hall to see what heavy loads they were bearing on their backs, one of the youngest of the men carrying no less than 125 pounds, and *Too-loo-ar-a*, one of *Ou-e-la's* wives, 100. In binding their packs they passed thongs around them, and these across their foreheads and breasts. When appropriating these furs, on the following day, a gay and novel scene presented itself. The best skins being arranged in an outside circle, the women were gallantly allowed each to make her selection from these; the remainder of the one hundred and fifty skins being

then chosen by the men from the inner circles. Several women had young children at their backs. "The gilt bands on their heads, the spiral tails hanging on each side of their broad faces, the boys and girls at play, made altogether a fine subject for a picture." *Ou-e-la*, speaking for his companions, had requested Hall to take out his choice of furs, first of all.

The reindeer by this date had nearly all gone south, not to come again till spring. Returning from a lonesome tramp, on which Hall had made a discovery of wolf-tracks, he was visited by almost all of the Innuits of the village, with their congratulations on his escape from a seeming danger. Their visits were, however, fast becoming so frequent and protracted as to give him much concern. Fully disposed to do nothing but rest in the enjoyment of the fruits of their summer labors, they did little else than visit and eat; "laying off and eating, eating, eating." Lounging in Hall's tent the day long and talking with Ebierbing and Too-koo-li-too, they became "quite a bore"; particularly as these talks were already bending Too-koo-li-too's mind to an inconveniently slavish obedience to their customs She gave the first proof of this by going off among the rocks to mend her *took-too* stockings for fear of offending these natives by working at all on *took-too* within a tent. It was only when all these Innuits had retired to their several *tupiks* that Hall's company could have a full meal. They must always share it with the unsophisticated children of the North; "such voracious eaters that they always get the lion's share." The evening meal, however, usually consisted of but cold rock-pemmican, tallow-candles, and degenerated meat, and even of this Ebierbing and Too-koo-li-too were fortunate if they got half a dozen mouthfuls before all was gone. In very pleasant contrast with this

is found an occasional note of the bringing in by Rudolph of a fat rabbit, in its winter garb, all white except the tips of its ears, "jet black;" or of as many as eight or ten snow-partridges. Flocks of these birds, in their winter dress, snow white, except their tail-feathers, were found in numbers on the sea-shore, after each fall of snow. In the depth of the winter they are scarcely distinguishable from the snow at a distance of 10 feet.

PTARMIGAN (*Tetrao Lagopus*).

Hall's journal closes the month of September with an imaginative comparison between the early snow-storms and Arctic aurora:

While out on a walk amid the snow-storm this p. m., I was struck with the similitude, in some respects, of the appearance of the snow, as it was swept along by the winds over the glassy surface of the new-made ice of the lakelets, to that of the aurora in these regions when in its full play. I refer to certain peculiar movements of the one corresponding to the other. If I wished a friend at home to get a fair idea of the movements of the aurora here in its general exhibitions, I should say go out during the first severe snow-storm and get within sight of some smooth ice covering some river, pond, or lake, and watch the snow as it is driven along. Now and then puffs of wind come sweeping along, so to speak, rays or beams of snow that seem to play fantastically. Innumerable numbers of these go to make up a most interesting scene. While the aurora, in rays or beams, shoots up vertically, and is of golden hue, and often of prismatic colors, the snow is swept along horizontally, and is white, the same as the aurora in the sunlight.—WHITE.

On the 5th of October, Joe brought to Hall some *muk-tuk*, the black skin of the whale, which was much relished; but Hall was still suffering from boils on his eyelids. His whole party were sick, and were confined to their tents for several days by a storm. On their recovery, Ebierbing, assisted by *Ou-e-la* and *Armou* built for him a large *igloo* near those which the Innuits had already erected for themselves. Hall's was built with much care, although it cost but two hours' labor; he found it quite strong and commodious. Its diameter was 10 feet.

The construction of one of these snow-houses, built by the Innuits of this region, is described by him substantially as follows:

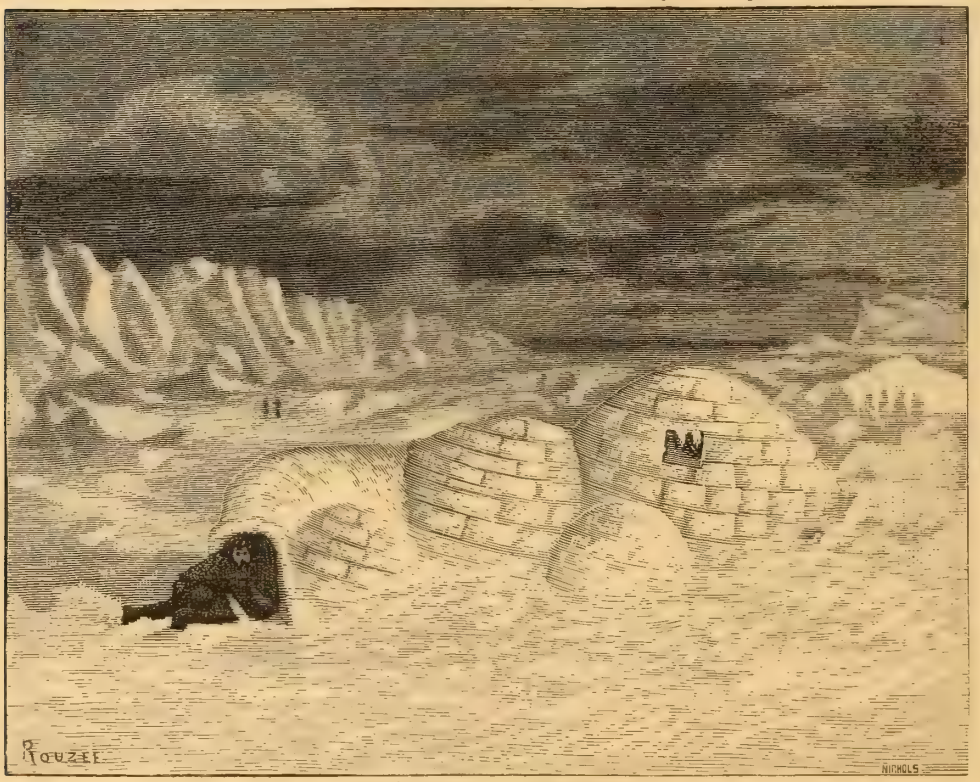
After making trial of several banks of snow, by plunging in their long knives, on finding the proper compactness, they cut blocks 2 to 2½ feet in length and about 18 inches in thickness. One set is cut from the spot on which the *igloo* is to be built, its floor being thus

sunken 18 inches below the general surface. In placing the blocks around this excavation, of about 10 feet diameter, the first tier is made up of those which, by increasing regularly in width, form a

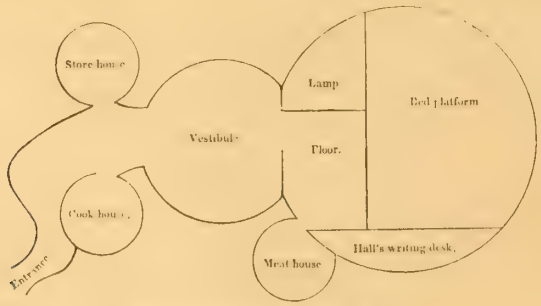
SNOW-KNIFE MADE OF BONE; DEPOSITED BY HALL IN THE SMITHSONIAN INSTITUTION.

spiral from right to left. They are laid from within, each being secured by a bevel on the one last laid and another bevel on the next one below. The joints are well broken. The blocks incline inwardly, thus regularly diminishing the diameter of the *igloo* and fitting it for the dome or keystone. Thirty-eight blocks were here used. For ventilation, a small hole is usually made by the spear. The crevices are well filled with snow within and without, making it nearly an air-tight structure. For a window, a small opening cut in the dome is filled in usually with a block of clear ice; in some cases with the scraped inner linings of the seal; this last makes a light on which the frost does not settle as upon the ice-blocks. The passage-way to the *igloo* is always long and points toward the south. The Repulse Bay natives shovel up much more snow upon the hut than the Greenlanders do. The *igloo* lamp is sometimes nothing more than a flat stone, about 6 inches in length, placed in a niche cut out of the wall, and having on it a little dry moss for a wick, which is supplied with oil by a slice of blubber from the bear or the seal. A stone lamp of better form, although poor enough, will give something of a fair light and warmth.

The comforts within such buildings are of necessity very limited. It is a matter of surprise that during the very many tedious Arctic



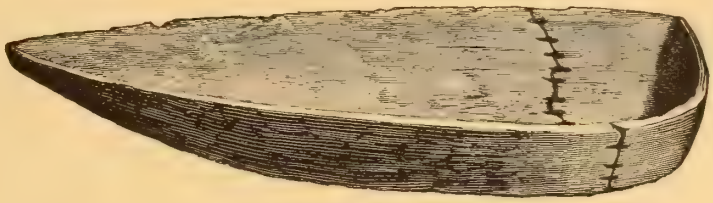
HALL'S IGLOO AT NOO-WOOK.



GROUND PLAN OF THE IGLOO.

hours spent within them by Hall he could bear with fortitude their worst evils; and could, at the same time, write his notes with such

fullness, study and correct typographical errors in his Bowditch, and work up his observations. He often "wondered at the simplicity to which the necessities of life may be reduced. His house was a



INNUIT LAMP.

(Deposited by Hall in the Smithsonian Institution; the fracture mended by the natives, with sinew. Dimensions: Length, 26 inches; depth, 11¼ inches to base of flange; flange, 2¾ inches thick, 2 inches high.)

building without a corner, without props or braces; the wall, roof, and door a unity, yet so strong as to defy the power of the fiercest Arctic gales."

Hall was now fairly established in his winter quarters. His instruments for making his observations were as yet unhurt. He had no apprehensions as to a want of provision. The Sylvia and other boats were safely housed. And it may not be a matter too trivial in this case to be noticed that Ebierbing, by the use of scissors, plied the vocation of barber to Hall's beard, over which a razor had not passed for six years. "Its length had been a special protection in the summer months against those tremendous blood-suckers called in the English tongue mosquitoes, which abound in swarms here." This last statement may be remembered in contrast with the experience of Parry's men in the higher latitude of Winter Harbor in June. Parry says: "The mosquito," *Culex pipiens*, "was never of the least annoyance to us, as is the case on the shores of Hudson's Bay and other cold countries."

Some weeks after this, Hall wrote to his friend, the captain of the Monticello, at Depot Island:

I exchanged tent for snow-house, and have now been in the *igloo* sixty days, and all the time as comfortable as I ever was in winter in my life. You would be quite interested in taking a walk through my winter quarters; one main *igloo* for myself and Eskimo children (Ebierbing and Too-koo-li-too), and three *igloos*, all joined to the main, for store-houses. A low, crooked passage-way of some 50 feet in length, made of snow, leads into our residence, which, as you will know from the word *igloo*, means a snow-house; its shape is hemispherical. I never before knew any Eskimos so provident as this tribe or clan I am wintering with. I doubt not they have four hundred or more of reindeer, killed last summer, on deposit within the distance of a circle of 20 miles in diameter. We are now living on polar-bear and walrus meat. Five polar bears, some musk-oxen, a great many partridges, and four walruses have been killed since arriving among the natives, besides a large number of reindeer.

CHAPTER IV.

INTERCOURSE WITH THE INNUITS—THEIR FEASTS AND HUNTS.

OCTOBER TO DECEMBER 31, 1864.

CHAPTER IV.

HALL'S MINISTRATIONS TO THE SUFFERING—THEIR GRATITUDE—FEASTS DESCRIBED—EBIERBING ANKOOTED—AN AURORA—MAGNETIC OBSERVATORY ERECTED—SLEDGE JOURNEY DOWN THE WELCOME—MUSK-OX HUNT—A FOX CAUGHT IN HIS OWN TRAP—CUSTOMS IN MAKING REINDEER DEPOSITS—A BEAR SLAIN—PREPARATION OF SKINS—HALL'S SEAL HUNT—PLAYING THE KEY-LOW-TIK—REMOVAL TO THE WALRUS-GROUNDS—OU-E-LA'S INNUIT STORIES—VISIT BY THE NATIVES TO THE WHALE-SHIPS AT DEPOT ISLAND—ALLEGED REASONS FOR ADVICE GIVEN BY THE INNUITS TO DR. RAE IN 1854—DISCOVERY THAT A DAY HAD BEEN LOST IN THE RECKONING—PRESENTS RECEIVED FROM THE WHALERS—SUCCESSFUL WALRUS HUNT.

A gale from the northwest, which had prevailed for three days, was followed on the 8th by a day with scarcely a cloud in the sky. The temperature was quite low; the thermometer inside the tent had read 19°. Hall with difficulty wrote out his notes, and began to fear he might lose his ink. Digging out from a wide snow-drift a box which contained two standard thermometers, he was glad to find them unbroken. They showed a temperature of 20°, the air outside the drift being 10°.

Although still suffering much from an abscess close to the ball of his right eye, and fearing that the left eye was also endangered, he had occasion to renew his visits of assistance to the natives, to supply

their necessities both of food and medicine. He found them entirely out of provision. Coming quickly at his call, they made a meal with him on a quarter of a pound of pemmican each, and took back a supply for the breakfast of the women and children. *She-nook-shoo, Ook-bar-loo's* son, was quite sick in his snow-house. His fever was arrested, and he was restored, partly by medicines and partly by nutritious food, the supply of which was controlled. The cooking, *Ook-bar-loo* refused to have done in a kob-lu-na's *igloo.*

The poor people were not lacking in a free showing of thankfulness by words and acts. They had abundance of deer-meat within a radius of 25 miles; probably three hundred reindeer scattered over the country in the different deposits which in their late hunting season they had made, and which they now frequented to bring in these supplies. Intercourse between them and Hall became still more familiar. He often dined out; and as often invited them to pemmican and coffee.

A cordial invitation and a full feast are thus described: Returning from a walk to his third encampment, when coming near the igloos, a band of boys and girls came running to meet him, crying out, "*Ki-etc, kal-la, ea-tu, ea-tu; took-too tood-noo, am-a-suit!*" "Come quick, for reindeer-meat and tallow are plenty." Following the youthful company to the *igloos*, he found a heavy load of deer skins and meat just brought in on a sledge from one of the deposits. A whole deer was part of the load. All the women of the village were present, as this was to be an unusual feast. The meat was placed in one of two *igloos* which were connected by a passage 10 feet in length, and of sufficient height for a man to stand up in it erect. In one *igloo* were the women; in the other, the whole reindeer was on the table-cloth—

a *took-too* skin—before which stood *Ou-e-la*, naked from his waist up, with hand-saw and hatchet to carve. Hall presented each of the men with a long knife, with his own name marked on the blade. He enjoyed the meat, which was good, as well as the reindeer-fat, which was 2 inches thick and abundant. On visiting the women's *igloo*, he found Mother *Ook-bar-loo* with an old one-eyed lady and all the younger ones seated around a pile of meat, having a happy time; three others, with their naked infants at their backs, sitting near, on the bed-place, Turk-fashion.

At another dinner, which consisted of boiled deer-meat and soup made of the blood, Hall thought the cooking was better than that from iron pans and pots; and he says that the stronger the venison, even if putrid, the better he and the Innuits relished it. "It has a rich flavor, while fresh venison is almost tasteless." On the 14th, he dined at *Nu-ker-zhoo's*, "Jack's," on the usual fare of frozen deer-meat, having lunched on black-whale tail with relish. At supper his own invited guests feasted on a soup made by cooking pemmican, Borden meat, and biscuit in a liberal quantity of water. Hot coffee with raw frozen venison was found to be distasteful. "The two do not go well together, for after a drink of hot liquid the icy venison makes the teeth ache. The change is entirely too great. The Innuits take all their warm drink first; they have sound teeth."

He now began to discuss his plans with them more fully in order to ascertain what assistance they would render him; proposing to proceed to *Iwille*, or *Iwillik* (Repulse Bay), with the whole company, and there make his headquarters, and thence move on by sledges to Neitchille, Boothia Felix. He would there determine upon the best way of reaching King William's Land. The Innuits agreed to assist him, but

advised that the whole company go well armed to Neitchille, as there existed a strong war-like feeling between the natives of that region and those of Iwillik.

Hoping to remove every obstacle in the way of accomplishing the object of his expedition, he accepted their advice and subjected himself to the unreasonable demands of the customs, prejudices, and even of the superstitions of the natives. As an instance of the last of these, he now submitted to the loss of even his most valuable garments, since an *an-ge-ko* (conjurer or medicine man) required them to be burned after he had professedly cured Ebierbing from sickness. Hall consented to believe that Ebierbing seemed much better after the operation, but was unprepared for the *an-ge-ko's* decree, that his own reindeer-skins, and those of his two Eskimo companions, should be destroyed. The favor of the Innuits was, however, thus kept up; they had already given him many skins, and he felt sure they would give more, if needed. He began to hope that these people, about forty in number, were becoming bound to him by strong ties, and would co-operate with him on his journey. He thought them the best of the Eskimos with whom he had met; and, willing to adapt himself to their habits in every respect, he discarded his outer clothing at this early stage of the season, and dressed himself in a full Innuit suit.

The varying temperature of this part of the month kept the whole party watchful of the state of their snow-houses, which were further endangered by their heated atmosphere, when crowded by visitors day and night. On the 15th the thermometer read 34° all day inside, and 27°, 30°, and 28° outside. The domes of all the *igloos* of the village were riddled with holes and threatened to cave in. Hall's had one prop to keep up the dome during the day, and at night he added two

more, and watched his chronometers close at his side, that he might shelter them if the roof should fall. Awaking next morning he found a dozen large windows which had been made by the melting snow. The premises were then vacated, and his friends took down the old walls and rebuilt him a house, handling the snow-blocks with great care, as they lacked their usual compactness. Again anxiously watching the thermometer, at 8 p. m. he found it read 31°, the wind being from the southeast with snow, which, if it changed to rain, would bring down every *igloo* in the village; but, at 1 a. m. of the 16th, the wind shifting to the northeast brought the thermometer down to 9°. The weather cleared up.

An aurora, seen on the night of the 18th, is thus described in the journals:

At 10 p. m. I went out, and the aurora was spanning the azure vault. A smart breeze from the north was blowing nearly the whole night. This seemed to add to the briskness of the merry dancers as they crossed the heavens to and fro. An hour before, the sky was clear, not a cloud or an aurora ray to be seen; now, a belt extended across the heavens, arch-like, some 25° above the horizon, its direction being from southeast to northwest. I watched the rising arch. Every few moments gave varied and magnificent changes. At length patches of aurora burst forth here and there. Gradually the main arch reached the zenith, and then was the grand part of the scene. Much of what was before in perpendicular rays shot athwart and across the heavens swiftly like a river of molten gold, here and there forming vast whirlpools, here and there an eddy, here and there a cataract of stupendous fall. When above my head, it seemed less than a pistol-shot distant. Indeed, it was near by. When I moved quickly, running up to the top of the hill by the *igloo*, making a distance of less than 50 fathoms, the arch of the aurora, that seemed stationary while I was by the *igloo* and in transitu, was now several degrees to the *southwest of me*. I returned as quickly to the *igloo*, and the auroral belt was directly overhead. So small a base, with so palpable a change in the bearing of the aurora, proved that it must have been quite close to the earth. A ball of fire fell during the display, and burst just before it reached the earth, throwing out prismatic scintillations in every direction.

Hall found himself unable to decide whether any noise actually proceeded from the aurora. On questioning the Innuits as to whether they were accustomed to hear noises during its display, they answered "Yes;" one of them endeavoring to imitate the sound by a puffing noise from his mouth, which noise, Hall says, did remarkably accord with what he thought he had heard himself during the time of the most active displays.* Auroral action of equal interest occurred repeatedly during the month.

On the 21st, Hall endeavored to erect a magnetic observatory. *Armou* cut out the snow-blocks and sledged them to the center of a fresh-water pond about fifty yards from the *igloo* and covered with ice several feet in thickness. Hall assisted in the building, passing the blocks of snow, which on the back and on the north side of the building were placed in two tiers half way up, making a double wall to shield from

* Lieutenant Hooper, R. N., second in command of Lieutenant Pullen's Boat-Expedition from Icy Cape to Mackenzie River, spent the winter of 1849–'50 near Fort Franklin, on Bear Lake. He wrote in his journal: "I have *heard* the aurora, not once, but many times; not faintly and indistinctly, but loudly and unmistakably; now from this quarter, now from that, now from one point on high, and at another time from one low down. At first it seemed to resemble the sound of field-ice, then it was like the sound of a water-mill, and, at last, like the whirring of a cannon-shot heard from a short distance."

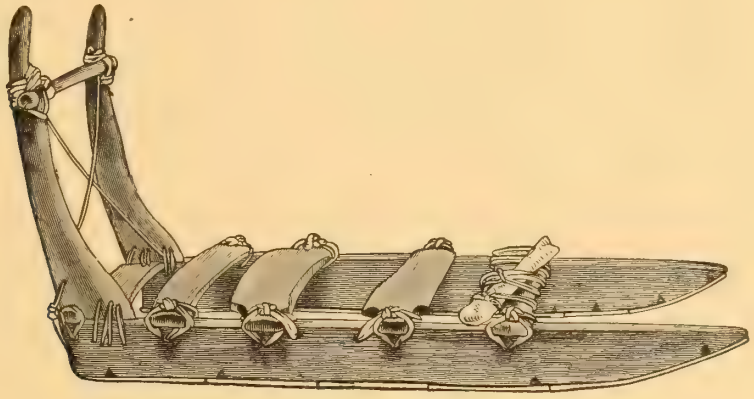
But at a later date in his Arctic life Hooper says: "I *fancied that I heard* this aurora, but the noise was indubitably produced by the cracking of the ice on the lake."

"There is no satisfactory evidence," says Professor Loomis, "that the aurora ever emits an audible sound. The sound supposed to have been heard has been described as a rustling, hissing, crackling noise. But the most competent observers, who have spent several winters in the Arctic Regions, where auroras are seen in their greatest brilliancy, have been convinced that this supposed rustling is a mere illusion. It is, therefore, inferred that the sounds which have been ascribed to the aurora must have been due to other causes, such as the motion of the wind, or the crackling of the snow and ice in consequence of their low temperature. If the aurora emitted any audible sound, this sound ought to follow the auroral movement after a considerable interval. Sound requires four minutes to travel a distance of 50 miles. But the observers who report noises succeeding auroral movements make no mention of any interval. It is, therefore, inferred that the sounds which have been heard during auroral exhibitions are to be ascribed to other causes than the aurora." (Treatise on Meteorology, p. 186.)

Hearne says that the Northern Indians call the aurora *ed-thin, i. e.*, deer, from their having seen hairy deer-skin, when briskly stroked, emit electric sparks. The Southern Indians believe it to be the spirits of departed friends dancing. When the aurora varies in color and form, they say their deceased friends are *very merry*.

the coldest gales. A large snow-block fashioned into a column 3 feet in height was set upright in the center of the observatory, and its top rounded off by another block. The whole was made into solid ice by pouring water on it. The house was now ready for the dip circle which had been loaned by the United States Coast Survey. The circle was unfortunately broken before it could be used with success.*

Discovering that his ink was frozen solid, he tried the successful experiment of boiling down about a pint to a thick paste, obtaining, by diluting this, a supply for his present use, and preserving his ink-powder and anti-freezing ink, the gift of the American Bank Note Company of New York.



ESKIMO SLED.

On the 22d a sledge journey of 10 miles was made down the Welcome, to give the hungry dogs of the Innuits a full meal from a whale's carcass. The runners of this sled, made of 2-inch plank, were 16 feet long, each being shod with bone from the jaw of a whale. Its 15 cross-bars made of staves, each 3 feet 4 inches long and 5 inches

*Before Hall left New York Mr. James Green, instrument-maker, set up this circle on ground adjoining Mr. Rutherfurd's observatory and went through a set of observations and of explanatory instruction with Hall..

wide, were lashed to the top of the runners by strong strips of walrus-hide. This play of the runners makes the Eskimo sled superior to all others in its flexibility over hummocky ice. Their depth was 9 inches, and the width of the sled outside of them, 3 feet.

The four Innuits, *Ou-e-la*, *Ar-too-a*, *Nu-ker-zhoo*, and *Oong-oo-too*, accompanied Hall, the dog team being made up of fifteen dogs. Unable to find the whale by reason of the quantity of pack-ice which had been forced on shore, the party crossed a bight and succeeded in satisfying the dogs from the carcasses of two bears, which were with difficulty uncovered from a frozen mass of stones. Making upon the rocks a scanty meal from what they had brought with them without touching the bear-meat, they lighted their pipes and took a good smoke. Then placing some provision within two deer skins which were made up by thongs into rolls to be drawn by the dogs, they started on a westerly course inland to visit some of the reindeer deposits. The sled was left behind.

A more exciting scene now offered itself. *Ou-e-la* soon discovered the tracks of musk-oxen, and brought up the whole party by his cries of "*Oo-ming-mung*, *Oo-ming-mung*." Quickly deciding that the tracks were not very old, and that the animals might be sighted, they entered on what the natives regard as their great hunt. The tracks freshened. The animals were not, however, sighted during the day. The party had to get up an igloo and retire to rest with but a scanty meal of about 3½ ounces for each man, part of which consisted of "casino."

Outside of the *igloo*, the thermometer showed 16° and inside, 25°; a temperature pronounced uncomfortable by the four warm-blooded Innuits and the one pale-face, all of whom slept closely sandwiched.

Hall's head and shoulders were between two of his friends, while his feet and legs were mixed up with those of the other two. Early in the morning, after smoking in bed, his companions gave him the only breakfast which could be had—the marrow melted during the night from a few reindeer-bones kept close by their flat stone lamp. They then slaked their thirst from a lakelet, cutting the ice to the depth of 18 inches, and resumed their hunt. Following the tracks which led in different directions, at one time southwardly toward the "Great Sea" (Hudson's Bay), and at others for long distances over hill and valley, at length they descried two animals on the top of a hill at the opposite end of a lake. The dogs were immediately loosed, but very soon some could not be prevented from turning aside to the tracks of reindeer. After considerable delay, however, they were again brought together by the cries of the Innuits, whose sharp, experienced eyes readily discriminated between the tracks of the reindeer and those of the musk-ox. The hoofs of both are as large as those of the common ox, and much the same in appearance; but the little knobs—fetlocks (?)—behind the hoofs are the tell-tale between the tracks, those of the reindeer being more prominent and longer. The stand-droppings of the deer are like those of the sheep; of the musk-cattle, "much like those from our cattle when dry-fed."

The party at this time had much difficulty in the pursuit, the snow being too soft to support their weight. As much as possible of the route was selected over the bare rocks, in passing over which they came frequently to places where the musk bull or cow had pawed through the snow and fed upon the grass and mosses of the soil; unmistakable signs also appeared of their having lain down and rested

through the night. Two of the Innuits went forward to follow up the tracks to which some of the dogs had continued to keep close.

Hall, with *Ou-e-la* and *Ar-too-a*, turned aside to visit a reindeer deposit. Noticing the tracks of a fox, on close examination they found a hole through a snow-bank which covered a cache, and on loosening some of the stones discovered a fox alongside of the meat within. He was dead and frozen hard as a rock. The hungry fellow had burrowed through the drift and forced his gaunt body in through a very small hole between the stones. But he had so gorged himself that it was impossible for him to get back through the hole by which he had entered. The meat was left untouched, for the Innuits cannot eat what a fox has meddled with. *Ou-e-la* led the way to another cache, which he opened, but only by a very severe hammering of one stone upon another to unloose the mass, locked up as it was by the ice A bountiful repast was made by the hungry travelers from the best parts of the meat, while the legs and head were re-cached for future use.

Hall notes that the custom of the Innuits when making these deposits is to throw down the carcass of the slain deer, and then to place upon and around it the head, legs, shoulders, and saddle; covering the whole with a heavy pile of stones. The frozen mass soon becomes so solid that any one but an Innuit would expect to separate it only by blasting, or by the use of the pick and the crow-bar. The Innuit perseveringly divides it by using a wedge-shaped stone, on which he strikes his blows with another often weighing 100 pounds.

After visiting this deposit, *Ou-e-la* catching up the distant sound of the dogs, by the use of Hall's glass descried his companions about four miles distant, standing by the side of a slain ox. The party again slaking their thirst at a lakelet, the water of which, as usual, was

filled with small vermin, soon joined their companions. The slain animal was immediately cut up and hauled to the *igloo*, within which all rested more comfortably on the night following, reposing on a part of their prize, the soft woolly skin, which felt like a feather-bed. Having no blubber for oil, they could have no light. In the morning, after making more than one meal on their fresh meat, they succeeded in getting their spoils to the place where they had left their sledge, which they now heavily loaded. An addition of reindeer and bear meat made up a weight in all of nearly 3,000 pounds, a heavy burden of 200 pounds for each of the dogs. They arrived at home early in the afternoon, the state of the weather having dissuaded them from pursuing the second musk-ox.

The day following, after a long pursuit by eight of the Innuits and their boys with guns, spears, and dogs, the party at times traveling over very rough ice and then on the new sea-ice which in some places treacherously opened under them, a bear was slain by a third ball, after his taking to the open water A line passed through his jaws brought the carcass on the floe, where, the weight of the animal being reduced by removing his entrails, the prize was at last secured by being drawn by ropes fastened through his nose and to each of his fore paws over the thin ice and across the fissures to the firm land While Hall was assisting in dragging this bear, he repeatedly broke through the ice into the sea.

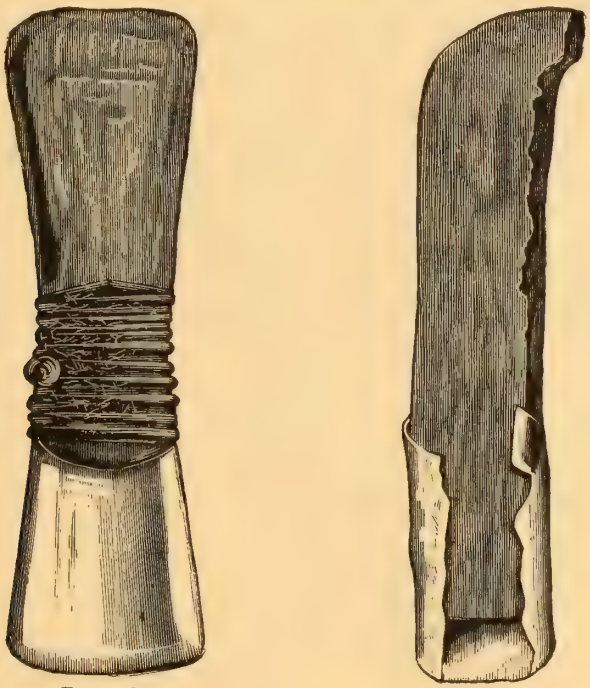
His next trip was with two parties of the Innuits coasting on two sleds—one 10 feet in length, the other 6—over ice so rough that "as they went along banging and thumping over it the very life seemed to be shaken out, and with difficulty they clung to the sleds." Arriving at a place where they, some time before, had made

a deposit under a boat, and turning it up by the use of the mast as a lever, the Innuits selected some needed things; among them a keg of blubber, which they presented to him. Their meal on this trip was again made on the skin from the tail of the black whale. Seals were seen, but, following their custom, the Innuits would not now hunt them, not having finished their work on the reindeer-skins. Until the walrus season begins, when they may have killed the bear or seal they only make a deposit of the animal.

The supply of venison being still abundant, feasting in the village was an every-day affair. When the invitations were general, as on the 29th, the feast was held in two connected *igloos*, in one of which all the women sat, as usual, Turk fashion, on their snow-bench bed, while in the center lay a huge pile of raw frozen venison and *tood-noo*, reindeer-fat. In the other *igloo* the men crowded close together; the walls of both resounding with peals of laughter, above the confusion of tongues. When they began the feast, a large piece of venison was picked up by one and the edge of it taken between the teeth which answered admirably as a vice to hold it fast, while the knife in the right hand was plied with saw movements near the nose, cutting the meat downward, but with danger to nose and lips. In this way as large a piece of meat was cut off as could be gotten into a widely-distended mouth. The main piece was then passed to the next guest, who followed suit. The *tood-noo*, in its turn, was served in the same way. The eyes of the reindeer were a delicate morsel. A dish of reindeer heads and necks, boiled with water and a large quantity of reindeer-blood making rich soup, sometimes closes the feast. Each guest takes a sup of this in turn until it is gone. The woman of the house then licks the *ook-sook* (pot), clean and prepares her own mess. The children are stuffed almost to suffo-

cation. The meals being finished, each one scrapes the grease from his face into his mouth and licks his fingers.

The Innuits busily employed themselves during the remainder of the open season in the preparation of reindeer-skins for dresses and bed-coverings; their custom in this differing from that of the natives of Cumberland Sound, in the help given to the women by the men. The processes for this, Hall says, are; first, to scrape the skin by an instrument called *sek-koon* (by the Frobisher Bay Innuits, *teg-se-koon*). This instrument is about 6 inches long, including the handle,



Bone edge. Iron edge.

SEK-KOONS OR SKIN-SCRAPERS, HALF SIZE.
(Deposited by Hall at the Smithsonian Institution, Washington.)

and is made of a peculiar kind of whet or oil stone, or else of musk-ox or reindeer bone, or of sheet-iron. The second step is to dry the skins thoroughly; the third, to scrape again with the *sek-koon*, taking off

every bit of the flesh; the fourth, to wet the flesh side and wrap it up for thirty minutes, and then again scrape with the *sek-koon*; which last operation is followed by chewing the skin all over, and again scraping and cross-scraping with the instrument. These laborious processes Hall describes as resulting "in the breaking of the skin, making the stiff hide soft-finished like the chamois-skin." The whole work is often completed within an hour.

Within the week which followed, *an-koo-ting* was again practiced in the *igloos*. On two occasions Ebierbing earnestly pleaded that the *an-ge-ko* would relieve him from rheumatism with which he had severely suffered. With Hall's consent he propitiated the *an-ge-ko* by the present of one of his two-quart tin coffee-buckets. When the hour came, a large deer-skin was suspended in the back part of the *igloo*. The *an-ge-ko*, who on this occasion proved to be *Ar-too-a*, entered with three men and the old woman *Ook-bar-loo*, and immediately asked that the light on the table, where Hall had seated himself to take notes, should be put out. The wide-extended wick of the Eskimo lamp also was thumbed down, except a bit at one end, which gave just light enough to make the scene gloomy and cold. The *an-ge-ko* then took off his boots, and, standing on the bed-place, made a speech of about ten minutes, during which Mother *Ook-bar-loo's* musical voice in the well-known song, "Am-na-yu-ya," contrasted strangely with the hoarse tones of the *an-ge-ko*, who sometimes made the dome of the snow-house shake. Ebierbing cried out from time to time, "*At-tee! At-tee!*" (Good! Good! go on). *An-ge-ko* then slipped quietly behind the curtain and made a sort of fluttering with his mittened hands, occasionally uttering a few words which seemed to be in the tone of petition to the Great Unknown. When Ebierbing was

operated on a second time, the ceremony was essentially the same. The company patiently awaited the *an-ge-ko's* appearance for half an hour, when he entered humming an Eskimo song, and then retiring, re-entered with the same song in the low door-way, *Ook-bar-loo* again striking up her monotony. Among his antics at this time he grappled with and, with a seeming supernatural strength, readily threw down two of the strongest Innuits.

Of this *an-koo-ting* the chant is the most striking feature; it is low and monotonous, and often broken by the suppressed sobs and moaning of the sick. The grim, swarthy faces of the men and women spectrally illuminated by the fitful gleams of the stone lamp, and their dark bodies swaying awkwardly to and fro and keeping time to the rude intonations of their barbarous songs, make up a wild and unearthly scene.

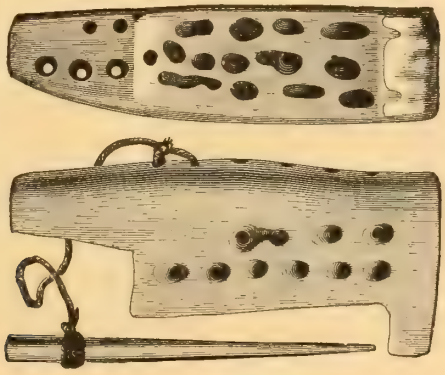
The last day of October was comparatively warm; the wind was southerly. From the top of a neighboring hill, Hall saw with his marine glass a number of seals, from two to three miles to the northeast, basking on a floe. One of them especially tempted him, as it was seen very near hummocky ice, which might serve as a mask until he could get within rifle-shot. Crossing the shallow bay, and trudging wearily over the very rough ice in some places so massive as to hide the animal entirely from view, he at length again caught sight of it by peering from the height of a pile of ice that had been thrown up by pressure. But before he could come within rifle-shot, he was compelled to wind his way through a labyrinth of high masses of old ice from the far north which had grounded here, and were keeping the new ice between them in a dangerous state for traveling. The ice over which he walked was covered, too, with crystals which

crisped so loudly under the foot that he could make his advance only while the seal was taking its cat-naps, which he found to vary from half a minute to a minute each only; he watched for these very closely. To secure a good position and a support for his rifle, he was obliged at last to throw himself flat on the ice, and hitch himself along, Eskimo fashion. In this way he got within fair range, and, peering through a crevice in the hummock, saw the seal shake its flippers, roll from side to side, and then drop its head for what he hoped would be its last nap. After taking careful aim, he thought for a few seconds that he surely had his prize; but on firing, the seal with one bound plunged handsomely through its hole into the sea, leaving him only the grim satisfaction of finding enough oil at the hole to show that his shot had taken effect. He knew that unless a seal is killed at the instant, it is lost; for it lies close to its hole, and generally with its head hanging over the edge, ready for a plunge. A deep fissure in the ice before him prevented any further efforts in this direction.

The 1st of November was a day of storm, the wind blowing a gale and the snow flying furiously. Hall commenced making his meteorological observations seven times a day. He had previously to this registered three times only;—morning, noon, and night. He now added the hours 3 a. m., 9 a. m., 3 p. m., and 9 p. m. Nine of the thermometers presented to him by Tagliabue, of New York, were still at his command. They agreed well at the higher temperatures, but below zero their differences showed as much as ten degrees. He succeeded in neatly repairing his sextant, using the tube of a broken thermometer as a blow-pipe and some "magic salve" as a flux.

On renewing his plans for the coming season, the Innuits proposed to make their way early to *Iwillik* for their own purposes.

The first stopping-place on their route would be Oo-koo-ish-e-lik, Wager Bay, where they would build *igloos* and hunt the musk, the bear, and the seal. Quite early in the season a passage could be made by boats along the land-ice to Repulse Bay. Hall thought that he could go on with them to *Neitchille*, and there learn the best way of advancing his original plans, which, however, he already saw would require length of time, particularly to gain the sufficiently strong confidence of the Innuits to induce them to accompany him to King William's Land. His record says: "I must not say I *will* do so and so, but rather say I will do the work I came to perform (God helping me), take whatever time it will." Up to the 10th of the month his party had opened but a small part of the provision brought from the Monticello, and he had given the larger share of this, including 90 pounds of pemmican, to his Innuit friends. But in turn he had been so generously feasted on reindeer, that he thought if he could live "one-fifth as well" during the remainder of his stay, he would have nothing to complain of.



CUP AND BALL.
(Deposited at the Smithsonian Institution.)

The tribe was far from lacking a natural love of amusement. They had learned the games of checkers and dominos, doubtless from

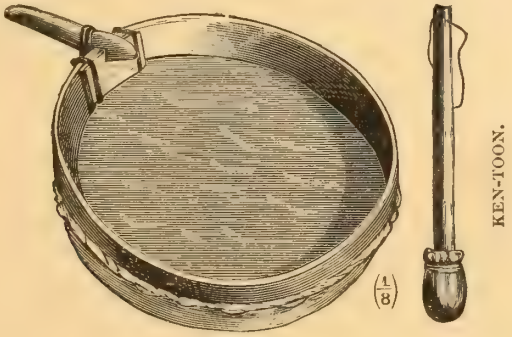
the whalers, and it seemed possible to teach them chess. A favorite game was that of the cup and ball.

They gave him an amusing exhibition of one of their serio-comic diversions. This was a performance on the *key-low-tik*, their bass-drum; the only musical instrument which he found among them. The instrument itself, and the changing characters from the comic and grotesque to the serious and superstitious, carried through the performances by both men and women, are described at some length.

PLAYING THE KEY-LOW-TIK.

The drum is made from the skin of the deer, which is stretched over a hoop made of wood, or of bone from the fin of a whale, by the

use of a strong braided cord of sinew passed around a groove on the outside. The hoop is about 2½ inches wide, 1½ inches thick, and 3 feet in diameter, the whole instrument weighing about 4 pounds. The wooden drumstick, 10 inches in length and 3 inches in diameter, is called a *ken-toon.*



KEY-LOW-TIK.

Hall gives, in substance, this account of the process of preparing the *key-low-tik*: The deer-skin which is to be the head of the instrument is kept frozen when not in use. It is then thoroughly saturated with water, drawn over the hoop, and temporarily fastened in its place by a piece of sinew. A line of heavy, twisted, sinew, about 50 feet long, is now wound tightly on the groove on the outside of the hoop, binding down the skin. This cord is fastened to the handle of the *key-low-tik*, which is made to turn by the force of several men (while its other end is held firmly), and the line eased out as required. To do this a man sits on the bed-platform, "having one or two turns of the line about his body which is incased in furred deer-skins, and empaled by four upright pieces of wood." Tension is secured by using a round stick of wood as a lever on the edge of the skin, drawing it from beneath the cord. When any whirring sound is

heard, little whisps of reindeer-hair are tucked in between the skin and the hoop, until the head is as tight as a drum.

When the *key-low-tik* is played, the drum-handle is held in the left hand of the performer, who strikes the edge of the rim opposite that over which the skin is stretched. He holds the drum in different positions, but keeps it in a constant fan-like motion by his hand and by the blows of the *ken-toon* struck alternately on the opposite sides of the edge. Skillfully keeping the drum vibrating on the handle, he accompanies this with grotesque motions of the body, and at intervals with a song, while the women keep up their own Innuit songs, one after another, through the whole performance.

At this first exhibition which Hall witnessed some twenty-five men, women, and children—every one who could leave home—assembled to see the skill of the performers, who would try the newly-finished instrument. As usual, the women sat on the platform, Turk fashion; the men, behind them with extended legs. The women were gaily dressed. They wore on each side of the face an enormous pig-tail, made by wrapping their hair on a small wooden roller a foot in length; strips of reindeer-fur being wrapped with the hair. These were black and white for those who had sons, and black only for those who had none. Shining ornaments were worn on the head, and on the breast they had masonic-like aprons, the groundwork of which was of a flaming red color, ornamented with glass beads of many colors. The women thus presented a pleasing contrast with the dark visages of the men in the background; while their naked infants were playing here and there in a mother's lap, or peering out from their nestling place in a hood.

Ook-bar-loo was the first performer. This young man was a son

of *Ever-at*, whose picture is given in Parry's Narrative of his second voyage, and who is named by him as helping to draw one of the charts. When *Ook-bar-loo* was tired out, *Oon-goo-too* took up the *key-low tik*, the women striking up for him their second song. *Ou-e-la* now gave Hall a punch in the side, which was understood to mean, "Just see what my people can do"; when the performers, stripping off their jackets to be naked from their loins up, alternately dealt each other's arms such fearful blows that Hall thought their very bones must be broken, and seemed to feel his own shoulders ache. The one who had played the *key-low-tik* the longer now struck his blows without mittens, and *Ook-bar-loo* ere long gave signs of surrender. The times varied from 10 to 13 minutes each.

Ar-too-a, *Ar-mou*, and *Ou-e-la* followed as performers at short intervals, one of them making as high as a hundred and sixty strokes in a minute with the *ken-toon*. Then *Nu-ker-zhoo*, getting his hand under the *key-low-tik*, and dealing rapid blows first on one edge and then on the other, by this jugglery kept it vibrating in the air and brought out from it the same sounds as when played in the usual way. Hall, being then called out by the house, tried his hand, but for less than three minutes, when the *key-low-tik* was on the floor, his arm and wrist aching from the weight, and the whole *igloo* convulsed with laughter. Ebierbing was called for, but was too weak from recent sickness to perform. Before this part of the exhibition closed, the performers showed up the differences in playing as practiced by the neighboring tribes.

The meeting now suddenly changed to one of a serious character. *Ook-bar-loo*, when he resumed playing, instantly extinguished the lights, leaving only the dim moon to creep in through the fresh-water-ice

window of the *igloo.* He then commenced his talk with the spirits, accompanied by clapping of hands, jumping up and down, sideways and forwards, and then backing out from the *igloo* and returning. During all this *an-koo-ting* one and another of the audience kept repeating "words which seemed not unlike those of a penitent giving in his experience at a revival meeting."

By the middle of this month the Innuits had finished their work on the reindeer-skins. Too-ko-li-too had labored for thirty days, fifteen hours out of the twenty-four, during which time, with but little assistance from Ebierbing even in cleaning the skins, she had made up, besides bedding, seven complete fur suits; two for Hall, two for her husband, two for herself, and one for Rudolph. Preparation was now busily made for moving off to the walrus-grounds, the first step toward which was to cover the sledge-runners with muck, a kind of peat obtained from a marsh after digging four feet through the snow and about a foot into the frozen ground. The muck is saturated with water, and a handful at a time placed on the runners at the very coldest hour, to ice them. Several families moved off on the 15th. Ebierbing, who went forward with them to assist in erecting *igloos*, saw flocks of ducks moving south. The first huts which were built were four connected ones having a common central place. In Hall's, Too-koo-li-too first covered the snow-bed place with boards, and put over these a quantity of dry shrubs and the reindeer-furs. Before Hall had left his old hut, on learning that the Innuit customs forbade the burning of shrubs in a new home, he had roasted enough coffee for a supply of two months. And before leaving the first *igloo* he had made the honest record in his journal, that on a visit from *Ou-e-la*

and *Ar-mou*, they, with Ebierbing and himself, indulged with great freedom in the use of Hubbell's Golden Bitters, the indorsement on which is, "Good for dyspepsia." "Although the bitters were as thick as molasses, it was difficult to get it from the bottles quick enough to supply the demand." The next morning was one of headache and repentance to some; yet the natives declared they had never been so happy as on the night before. Long before this, however, they had learned from the whalers to drink, smoke, and swear.

On entering their new *igloos* the Innuits renewed their performances of the *key-low-tik* and of *an-koo-ting*. In the latter of these performances the *an-ge-ko* (*Ar-too-a*) now made use of three walrus spears. One of these he thrust into the wall of the snow-house, and, after the usual accompaniments which have been already described, ran with it outside of the *igloo*, where his ejaculations were responded to by the party inside with the cries of "*At-tee! At-tee!*" Returning with his spear to the door, he had a severe wrestling match with four of the men, who overcame him. But coming again into the central *igloo*, and having the lights which had been at the first patted down, relit, he showed the points of two spears apparently covered with fresh blood, which he held up in the presence of all. Muttering something in a low tone at them, he gave a puff and then wiped them clean with the Innuits' universal dish-cloth—the tongue. The *an-ge-ko* then recommenced his incantations, addressing for a minute or so, with his head erect, the Great Power above, and then, with head on the floor, the Spirit below. Kneeling on Too-koo-li-too's fur jacket in the center of the hut, he kept this up for a full half hour. After his exhibition had closed, Hall learned that the Spirits had revealed to the *an-ge-ko* that he and Ebierbing must exchange

wives for the night.* This, Hall effectually intervened to forbid. He records, also, the clear testimony of the wife of one of the Innuits in behalf of Too-koo-li-too herself that she had repelled the previously attempted efforts on the part of the other women to persuade her to accept the decree.

In a time of sickness during the month Hall himself had been prevailed on to be *an-kooted*, and the *an-ge-ko* had told him that his sickness had been owing to his having eaten on his first expedition *tood-noo* prepared in a wrong way, and to the fact that he had left in his own country an enemy who had tried to do him harm. When he acknowledged that these two things were true, the Innuits were much pleased with the evidence of power in their *an-ge-ko*, and Hall consented to obey the decree given him, that he should never again wear certain garments which had been presented to him by some of his Innuit friends.

During the last days of the month several walrus hunts were entered upon, the first success in which was prevented by the poorness of the seal-skin lines which had been made to supply the loss of the stronger ones missed some time before from their place of deposit. From unmistakable signs noticed when they had gone down the coast for these lines, the natives were satisfied that they had been stolen by some party from one of the whale-ships. Hall accompanied them on

* Hearne says of the Indian tribes on the Sea of the North: "It is a very common custom in this country to exchange a night's lodging with each other's wives; but this is so far from being considered criminal that it is esteemed one of the strongest ties of friendship between the two families; in case of the death of either man the other considers himself bound to support the children of the deceased. This duty is never neglected. (Hearne, p. 129.) Father Veniamínoff, a Russian priest, who labored among the Aleutian tribes, is quoted by Mr. Dall as saying that formerly they practiced frequent secret orgies, and that "a *guest shared all marital rights with his host.*" These customs, however, as is well known, are not exclusively those of the North American tribes.

their hunts, although he had been several times confined to his *igloo* by a sore throat and by bruises received on his rough sledge-journeys. He endeavored to supply the loss of the walrus-lines by loaning the sheets of his boat Sylvia. A bear and a number of walruses were secured; others which were only struck on the ice were lost during the nights, when they escaped by the tide setting the floe back to the land. But the condition of the ice was fine for hunting, and the promise for the season was good. Hall notices that on each morning, after the men had gone off to hunt, their women took each a cup down to the shore and left it there; probably under the idea that this would bring success.

On the 6th of the month following, *Ou-e-la* and Ebierbing found a walrus of a large size butting his head through the ice, which was 4 inches thick, with a force sufficient to throw masses of it several feet into the air. On a signal to the other hunters they scattered themselves, watching for another appearance. The animal burst through the ice six times before he was harpooned Generally, when pursued, he moves in a direct line, and the natives are accustomed to calculate where he will probably make his second or third rise. The holes which he works up through the ice are sometimes as far apart as 100 rods, but the distances decrease in proportion to the length of the pursuit, during which the animal is often drowned. The Innuits sometimes follow nearly the same plan in drowning ducks, though this is done when there is no ice to cover them. A flock which is swimming is approached by the hunter in a *ky-ak*, when most of them take alarm and fly away, but some dive down. The hunter rapidly follows in the probable direction in which the now submarine ducks are swimming, and the instant that one appears above water, it

is frightened down by shouts and antic tricks in the way of motions. This one is selected as the victim or prize, and, as the hunter gets near it, he sees and follows it through the clear water. As often as it comes up to breathe, his shouts and motions follow, and thus the pursuit is made till finally the poor duck is dead. Hall remembered that in 1861, when making a passage through the Beare Sound of Frobisher, some of his Innuit friends could not be restrained from pursuing this sport till they had deceived the ducks in the way described. "It certainly is an economical way to secure provision without the use of spears or guns."

On the same day on which the walrus was secured, several of the natives had a desperate encounter with a huge Polar, killing it while three of their dogs kept the animal at bay. One of the lances which had entered the animal, he drew out with his teeth, and gave their best dog a terrible wound, cutting through the skin and flesh of his neck as clean as with a sharp knife.

Ou-e-la, on returning from these hunts, entertained Hall with some huge bear-stories. With much emphasis he told of a woman who, a few years before, had heard a strange noise outside her *igloo*, and on leaving it, was seized by a large bear, who completely scalped her and disemboweled her child. An old man in the *igloo*, although a cripple in both legs, fastening a long knife to the end of a pole and crawling through the narrow passage-way of the hut at the doorway, braced his lance against the icy floor, when the bear, while springing toward his new victim, became his own executioner by receiving the knife directly through his heart. *Ou-e-la* further said that he had once, single-handed, killed a large bear with a lance only; at another time he had killed a bear of equal size with bow and arrow, without the

assistance even of dogs. He had seen a bear kill a walrus by using a piece of ice weighing more than any one man could lift. The bear rounds the ice into a ball, and stealthily runs on his hind legs toward his sleeping victim; if the first blow on the head of the walrus fails to kill, he finishes his work by repeated blows on the thick skull. He contents himself with the blubber only, leaving the mass of meat for the fox, or for other animals which may follow his tracks.

A peculiar animal was described to Hall, an account of which is scarcely to be found in Arctic books. The natives speak of it as being larger than the bear, and as very ferocious and much more difficult to be killed. It has grayish hair, a long tail, and short, thick legs, its fore feet being divided into three parts like the partridge's; its hind feet are like a man's heels. When resting, it sits upright like a man. A Neitchille Innuit, crawling into a hole for shelter in the night, had found one sound asleep and quickly dispatched it with his knife. It may be added here that Ebierbing, now residing in the United States, confirms such accounts of the "*Arc-la*," and says that the animal once inhabited his native country on Cumberland Sound.

On the morning of the 10th, Ebierbing, *Ou-e-la*, *Ar-too-a*, *Armou*, *Oon-goo-too*, and *Nu-ker-zhoo*, accompanied by Rudolph, started on two sledges with full dog-teams to visit the whaling-vessels wintering in Depot Island—a contemplated trip which had been deferred only till the walrus season should commence. Rudolph was the happiest of the party. He had proved of little service to Hall, having early become dissatisfied with the strange mode of life to which his employer had habituated himself. Yet he was at times a voracious eater, consuming as much as 8 pounds of solid food at a meal, and then complaining of a feeling of "gone-ness," and fearing he would starve

to death. A part of the time he had been separately put in charge of one of the natives. He now looked forward with great satisfaction to resuming his life on shipboard and to ship-diet The parting was friendly. Hall gave him a letter to the captain of the Monticello, asking that he would get a place for him on one of the whalers. Rudolph was also cautioned to have care of himself on the sledge journey, and the natives were requested to see that he should not be frost-bitten. At the same time a confidential history of Rudolph's conduct was sent to the ship, lest the man should gain credit if he attempted to spread misrepresentations among the whalers. His dissatisfaction and his uselessness to Hall had been largely owing to his disease of homesickness and, during the latter part of his time, to an attack of scurvy.

A second letter to Captain Chapel requested that he would grant, at Hall's cost, whatever reasonable requests the natives might make, if the value of the articles asked for by them should exceed that of the skins and clothing taken down by them for barter. Among the articles for which Hall himself asked were a gun, a spy-glass, some walrus-lines, and tobacco, with a loaf of bread and a piece of butter for Too-koo-li-too. He wanted 50 pounds of tobacco, for it went further than anything else in gaining the good-will and help of the natives. *Ou-e-la* waited for the dispatches, which were made up by 9 a. m., and then overtook the sleds a mile in advance out on the rough ice, where the dogs were howling and springing with all their might to be off. Hall went with him that far, and on parting gave *Ou-e-la* a kiss (*koo-nik*) on his iron though warm cheek. The journal says:

> The sun was just lifting its glorious face from the ice horizon of Rowe's Welcome. The air was calm and the temperature 92° below freezing-point by my large thermometer; therefore it was dry and exhilarating. The heavens, opposite the sun, were glowing in warm crimson clouds, their upper edges tinted with purple

and silvery hues. The day throughout was the coldest of the season, as the thermometer showed, but not the coldest as far as its effect upon the human system is concerned. The average of three sets of observations on eight thermometers gave 65° below freezing-point as the average of the day. I have tried some experiments, perhaps too simple to require record. I put one of my fingers in contact with the brass plate of one of the thermometers; instantly I felt a sharp running sensation; in a few seconds that part of my flesh exposed to the brass plate was white as snow and frozen solid. A smart rubbing with my other hand soon took the frost out, and the finger was as well as ever. I placed another finger for thirty seconds in exposed mercury; the smarting at first was severe, in fact, felt as though the finger was in a fire, but before the thirty seconds expired the smarting ceased, and I felt noways disagreeable. On taking my finger out of the mercury, it was frozen solid as a rock; a smart persevering rubbing again took the frost out. I tried several times during the day the experiment of keeping my hands unmittened, walking around thus for half an hour without their feeling very cold, and could have continued with my hands thus exposed for a longer time had I been on a smart walk, as when traveling on a journey. When there is no moisture in the air, as to-day, no one would suppose the temperature as cold as the thermometers indicate. I have felt colder in the States with the thermometer 32° than here in my walks to-day with hands and face exposed and having no other coat on but my civilization (Brevoort) one.

DOG-SKIN MITTENS.

The letter of the most interest sent by the natives to the whalers reads as follows:

WINTER QUARTERS, IN IGLOO,
NOO-WOOK, WEST END ROWE'S WELCOME,
LAT. 64° 46′ N., LONG. 87° 20′ W., *Friday, December* 10, 1864.

DEAR FRIEND CHAPEL: In this letter I have some deeply interesting intelligence to communicate to you. Since falling in with the natives I have not been idle. Nothing in Parry's narrative of second voyage for the discovery of the Northwest Passage relating to the Eskimos of Winter Island and Igloolik but these natives are perfectly posted up in. Indeed, I find through my superior interpreter, Too-koo-li-too, that many deeply interesting incidents occurred at both-named places that never found their place in Parry's or Lyon's works. But the great work already done by me is the gaining little by little from these natives, through Too-koo-li-too and Ebierbing, news relating to Sir John Franklin's Expedition. This,

you know, was the great object of my mission to the North. I cannot stop to tell you now all I have gained of this people—no, not the one hundredth part.

[The natives are now loading sledge; it is 7 o'clock 30 minutes a. m.]

I will give you very briefly what the people of England and America will be most interested to learn. When I come down I shall bring my dispatches and journals up to the time of writing you, and these will be committed to your care for transmitting to the States. The most important matter that I have acquired relates to the fact that there *may* yet be *three survivors* of Sir John Franklin's Expedition, and one of these, Crozier, the one who succeeded Sir John Franklin on his death. The details are deeply interesting, but this must suffice till I come down: Crozier and three men with him were found by a cousin of *Ou-e-la* (Albert), *Shoo-she-ark-nook* (John), and *Ar-too-a* (Frank), while moving on the ice from one *igloo* to another; this cousin having with him his family and engaged in sealing. This occurred near Neitchille (Boothia Felix Peninsula). Crozier was nothing but "skin and bones," was nearly starved to death, while the three men with him were fat. The cousin soon learned that the three fat men had been living on human flesh, on the flesh of their companions who all deserted the two ships that were fast in mountains of ice; while Crozier was the only man that would not eat human flesh, and for this reason he was almost dead from starvation. This cousin, who has two names (but I cannot stop to get them now), took Crozier and the three men at once in charge. He soon caught a seal, and gave Crozier quickly a little—a very little piece, which was raw—only one mouthful the first day. The cousin did not give the three fat men anything, for they could well get along, till Crozier's life was safe. The next day the cousin gave Crozier a little larger piece of same seal. By the judicious care of this cousin for Crozier, his life was saved. Indeed, Crozier's own judgment stuck to him in this terrible situation, for he agreed with the cousin that one little bit was all he should have the first day. When the cousin first saw Crozier's face, it looked so bad—his eyes all sunk in, the face so skeleton-like and haggard, that he did not dare to look upon Crozier's face for several days after; it made him feel so bad! This noble man, whom the whole civilized world will ever remember for humanity, took care of Crozier and his three men, save one who died, through the whole winter. One man, however, died a short time after the cousin found them, not because he starved, but because he was sick. In the spring, Crozier and the remaining two men accompanied this cousin on the Boothia Felix Peninsula to Neitchille, where there were many Innuits. Crozier and each of his men had guns and a plenty of ammunition, and many pretty things. They killed a great many ducks, *nowyers*, &c., with their guns. Here they lived with the Innuits at Neitchille, and Crozier

became fat and of good health. Crozier told this cousin that he was once at *Iwillik* (Repulse Bay), at Winter Island and Igloolik, many years before, and that at the two last-named places he saw many Innuits, and got acquainted with them. This cousin had heard of Parry, Lyon, and Crozier, from his Innuit friends at Repulse Bay, some years previous, and therefore when Crozier gave him his name he recollected it. The cousin saw Crozier one year before he found him and the three men, where the two ships were in the ice. It was there that he found out that Crozier had been to Igloolik.

Crozier and the two men lived with the Neitchille Innuits some time. The Innuits liked him (C.) very much, and treated him always very kindly. At length Crozier, with his two men and one Innuit, who took along a *ki-ak* (?) [an India-rubber boat, as Ebierbing thinks it was, for all along the ribs there was something that could be filled with air], left Neitchille to try to go to the *kob-lu-na's* country, taking a south course.

When *Ou-e-la* (Albert) and his brothers, in 1854, saw this cousin that had been so good to Crozier and his men, at Pelly Bay which is not far from Neitchille, the cousin had not heard whether Crozier and the two men and Neitchille Innuit had ever come back or not. The Innuits never think they are dead—do not believe they are. Crozier offered to give his gun to the cousin for saving his life, but he would not accept it, for he was afraid it would kill him, it made such a great noise, and killed everything with nothing. Then Crozier gave him a long, curious knife (sword, as Ebierbing and Too-koo-li-too say it was), and many pretty things besides. [The dogs are all in harness, and sledges loaded, and Innuits waiting for my letters. I promise to be ready in 30 minutes.] Crozier told the cousin of a fight with a band of Indians—not Innuits, but Indians. This must have occurred near the entrance of Great Fish or Back's River. More of this when I see you. * * *

God bless you.

C. F. HALL.

This unusually ill-written letter is quoted almost literally in order to show Hall's excited state of mind on receiving some of the earliest of what he then believed to be news of Franklin's party. It will appear in the latter part of the Narrative that the "cousin," so much spoken of, was found by Hall to have been far less useful or humane to Crozier than is here noted. Hall's readiness to believe everything heard from the natives on his first acquaintance with them was largely

corrected by his further experience. At first he seems to have believed what he wished to believe. But his later journals record a number of corrected judgments, always frankly entered, and even against himself.

Nearly all the men were now absent from the settlement. After one unsuccessful attempt made by some of the natives who remained, to secure a walrus where the ice was found too thick for the animal to break through, a second effort was rewarded by their capturing the larger part of one, the remainder being lost by the ice-floes coming together and massing upon it. They had resumed their hunt in consequence of having seen, the night before, "a walrus springing right up through the ice-floor of their *igloo*";—to them a sure sign of success.

Another instance of their low superstitious customs was thus shown: The pale-face, having expressed a desire for a change of food, was presented with the head and neck of a reindeer, for fear that there would be great trouble in catching a walrus; but this provision could be placed neither on the floor nor behind the lamps on the platform, nor could it be either cooked or eaten with walrus-oil or on the same day with walrus-meat. Pieces of the frozen mass were, therefore, chipped off on the bed-platform with carefulness that not one should fall upon the floor, and they were dipped in old rancid seal-oil before being eaten. Four quarts of walrus-oil were at the same time presented to Hall for his lamp.

A leaf from Hall's journal of the 18th, written on receiving this present, will further show the care which he exercised in subjecting himself to the low superstitions of the tribe:

Erk-tu-a came in bringing in her arms the head and neck (raw, solid, and frozen) of a reindeer for me, as she heard that I wanted a change from walrus-

meat. This venison had to be completely enveloped before it could be brought into the *igloo*, and, when in, could only be placed on the bed-platform. To have placed it on the floor or on the platform behind the fire-lamp, among the walrus, musk-ox, and polar-bear meat which occupy a goodly portion of both of these places, would have horrified the whole town, as, according to the actual belief of the Innuits, not another walrus could be secured this year, and there would ever be trouble in capturing any more.

Old Mother *Ook-bar-loo* and the son of *Erk-tu-a* were both in my *igloo* at the time this present was made. Both these parties are, of course, greatly devoted to having everything according to the way of old—in other words, according to the custom of their fathers and many preceding generations. They watched my every movement; but I was no small adept in this matter, so I proceeded to gratify the calls of a hungry stomach in the following manner: I first unveiled *Erk-tu-a's* gift on the very spot where she had placed it, and called for a hatchet. Frozen chips of meat now flew to the right and left, *westward;* not one toward the floor. I had to be *very, very* cautious about that. These chips of raw frozen venison, when gathered up, made quite a pile for my breakfast. A cup of oil in which to sop these chips was soon near me. Then I proceeded, just as any Innuit would, to eat a hearty meal! The oil which I used as the sop was seal-oil, rancid and stinking. According to Innuit custom, walrus-blubber, or oil from it, cannot be used on any account with *tood-noo* meat. Notwithstanding the oil I used was of the condition I describe, yet I must state the truth that I have really got so far along in Innuits taste to like it thus, and to like it very much.

Particles of meat that were scattered around on the bed-platform during my carving operations with the hatchet could not be brushed on the floor, as this would have brought down the indignation of my houseful of visitors. The *took-too* skins on which these fine dust pieces were had to be taken up and shaken at the farther end or back side of the bed-place, next to the wall of the *igloo*. In this way, and *in this way only*, could the meat particles, including even such snow and ice as had been jammed off the neck and head, be disposed of to the satisfaction of an honest, kind-hearted, but superstitious people.

The head of this gift, I regret to learn, cannot be cooked now, though from it I could have a delicious soup. The whys and wherefores are that it would make trouble among the walrus. It can be done after the walrusing season is over, and any time before it begins again.

This *Erk-tu-a* was one of the visitors to the ships of Parry and Lyon on their Second Expedition, 1821 to 1823. She gave Hall the

Innuit tradition of a punishment mentioned in Parry's Narrative as administered for theft, which story is an illustration of the power of superstitious belief held by this people in their *an-ge-ko* ;—or, as this word was pronounced at Ig-loo-lik, where Parry was, *an-nat-ko*. *Oo-oo-took*, a superior *an-nat-ko*, was charged by Parry when at Ig-loo-lik with the crime of theft for taking a shovel, or a part of one, from alongside of the ship. Parry had him taken to a place between decks, and his hands firmly lashed up to the mast. Then two guns were loaded and fired at him. The balls did not hit him, but one passed close to his head and lodged in the mast. The other ball went close to his loins, but did not injure him. The guns were so near his body that the powder felt hot. Parry fired one of the guns, and came very near killing himself, the ball glancing and rebounding in such a way that it passed close to his head. Another gun was about to be used in firing at *Oo-oo-took*, but it was found to be cracked (both barrel and stock), and, therefore, it was laid aside. Then Parry caused him to be whipped with something that was made of ropes with knots in them—cat-o'-nine-tails. The Innuits standing around and witnessing all this wanted to help *Oo-oo-took* defend himself, but he said: "Let the *Kob-lu-nas* try to kill me; they cannot, for I am an *an-nat-ko*." Then *Oo-oo-took's* hands were untied, after which the *kob-lu-nas* tried to cut his head and hands off with long knives—probably swords. Every time a blow was struck, the extreme end of the knife came close to *Oo-oo-took's* throat; occasionally the blade came just above the crown of his head, and when the attempt was made to cut off his hands the long knife came down very near his wrists; but, after all, he was uninjured *because he was a very good An-nat-ko*. Some of the blows, however, did execution, cutting deep gashes in throat, head, and wrists; but at

each stroke, as the knife was lifted, the wounds instantly *healed up, the an-nat-ko* being made whole by the Good Spirit who protected him.

When *Oo-oo-took* was permitted to go on deck, he attempted to go ashore. He was passing out of the gangway when four men seized him; but during the struggle to free himself from further punishment, he kicked one *kob-lu-na* down the snow-steps, which fall nearly killed him, and the *kob-lu-na* suffered with a lame back for a long time. Finally, the *kob-lu-na* conquered him and put him down between decks, in a cold, dark place, where he kept him two days and two nights, but while so confined, one good *kob-lu-na*, in a very sly way, gave him something to eat; otherwise he had nothing to eat or drink.

After *Oo-oo-took* had been one day and one night in the dark hole, he thought he would use his power as an *an-nat-ko*, and destroy the vessel by splitting it through the middle from stem to stern. So he commenced calling to his aid the Good Spirit, when a great cracking noise was made, now and then, under the ship, and at the end of the two days and two nights' confinement, the *kob-lu-nas*, fearing from such great and terrific noises that the ship would be destroyed, let *Oo-oo-took* go.

This tradition, which Hall says was believed by all the other Innuits around him, is in rather curious contrast with the account given by Parry himself, which is as follows: [Official Narrative, p. 412.]

> The delinquent was, therefore, put down into the Fury's store-room passage and closely confined there for several hours; when, having collected several of the natives on board the Fury, I ordered him to be stripped and seized up in their presence, and to receive a dozen lashes on the back with a cat-o'-nine-tails. The instant this was over, his countrymen called out, "*Ti-mun, ti-mun-na*"—

that's right, that's right; and seemed much relieved from the fright they had before been in while the fate of the thief seemed doubtful; but in three minutes after, not one of them was to be found near the ships, for they hurried off to the huts as fast as their legs and sledges could carry them. The example proved just what we desired; in less than eight and forty hours, men, women, and children came to the ships with the same confidence as before, always abusing *Oo-oo-took*, pronouncing themselves and us uncommonly good people, but evidently more cautious than before of really incurring our displeasure. The occurrence just related, instead of being placed to the account of these people's bad propensities, rather served to remind us of the rareness of such occurrences, and, therefore, to furnish fresh proof of their general honesty.

From a conversation held about this time, through Too-koo-li-too as interpreter, Hall believed that he had gained the key to the fact mentioned by Dr. Rae in his report to the Hudson Bay Company in 1854, that the natives at Pelly Bay had great objections to his party traveling across the country in a westerly direction, and had attempted to puzzle and mislead the interpreter. Hall was told that "some of the Innuits with whom he was wintering, had tried, together with others from Pelly Bay, to persuade Dr. Rae to go to Shartoo, an island in Akkoolee Bay (the island called Prince of Wales Island, and the bay, Committee Bay, in Dr. Rae's chart), where he would find spars, rigging, casks, and boxes, and perhaps the hulk of a vessel. They understood from him that these were the very things he was looking for." The Innuits, therefore, professed that the objections referred to had been made in good faith, and in order to lead Rae's party to the best locality.

On the 23d, Hall discovered that he had lost a day in his reckoning. He had not confided in his dates for some time back, but now found the means for a correction. Going to the top of a hill to see the sun rise at 10 a. m., he saw it about a diameter and a

half from the horizon, above a low, thick bank of frost-smoke which hung over the sea-ice. Through the upper margin of the frost-smoke the true sun was clearly seen without any dazzling rays; but, above, two mock-suns showed themselves with a brilliancy overpowering the eye. With his pocket sextant he measured the angular distance between the nearest limbs of the sun and the moon, and found it to be approximately 62° 30′; which he verified by the use of his larger sextant. His table of lunar distances in the Nautical Almanac showed this as the true distance for December 23d in place of the 22d, as he had at first supposed the day to be. Looking over his journal, he discovered that the lost day could be accounted for by the want of all notes on one of his sick days, November 25.

The sledge party now returned, and were heartily welcomed as soon as their very quiet entrance was noticed. One of the sleds having become unmanageable by the breaking off of the muck-shoeing, the dogs had found it hard work to draw the heavy return load of natives and goods piled up on the other one; their fatigue had prevented the howling usual on their approaching home.

Two chests and a box, directed to Hall, were soon slid along through the snow passage-way into his *igloo*. They contained a variety of donations from Captains Chapel, of the Monticello; Rogers, of the Concordia; White, of the Black Eagle; Tyson, of the Antelope, and Jeffries, of the George and Mary. Besides the very welcome provision which made up the mass of these gifts, a quantity of different-colored beads and brass ornaments for the head had been sent as presents to the women, together with some articles to be exchanged for furs. In his record of the day, which not unfrequently is found written as though it were a letter to his two never-forgotten

friends, the following expressions show his appreciation of the change in diet now experienced:

> O, my dear Mr. Grinnell and Mr. Brevoort, what a glorious supper we have had to-night; a change now and then in his food is what a white man likes. Indeed, the Innuits themselves like a change from their food to that of civilization after getting a little accustomed to it.

The journal of the 24th contains the record of a second indulgence to the natives in his serving out to all who had assisted in building his new *igloo* a quantity of Bourbon whisky, diluted with hot water and sweetened with sugar. This was dealt out contrary to his previous resolutions, but under the idea that, as they had acquired a taste for it from the whalers, it would be of service to him to indulge them occasionally. He adds: "I have found that I can do without liquor, and I do not touch a drop of anything stronger than tea or coffee. I will not say the Innuits shall not have a few drops once in two or three weeks, but the quantity to each shall be very small."

The sledge journey to the ships, 135 miles distant, had been made in ninety-nine hours, and the return journey in seventy-eight; allowing, as did Ebierbing, one of the party, one-half of the time on their return as spent in stoppages, the average distance traveled had been about three and a half miles an hour. Captain Chapel sent back to Hall a letter of cordial good feeling, offering him further assistance. It has been already noticed as a fact, well known in New London, that the whalers wintering in this region understood the instructions of their employers as authorizing them to assist him very freely.

Chapel's letter, in speaking of the temperature where he was wintering, said:

> The mercury has been from 36° to 56° below zero for the last fifteen days. The glass has not been above —32° for twenty days, and the large spirit ther-

mometer you gave me, and in which I put so much confidence, has been frozen for three weeks. It froze with the mercury at — 36°, and when the mercury stood at 34° below, the spirit was 100° below. This would surprise our New York friends if we should tell them.*

An invitation having been given to the men while visiting the ships that they should return and bring their wives with them, Hall was glad to find that, at the next *an-koot-ing*, the *an-ge-ko* announced an order from the Good Spirit that these visits should not be made, lest death after death should occur in the tribe. In addition to other plain reasons for his being gratified at this decree, there was now a better hope that the whole party would move early in the spring to Repulse Bay. He felt sure that his further plans, which depended on this, would be defeated if these visits were made.

On the 25th, he took a meridian altitude of the sun, and found the true altitude to be 1° 51′; the observed lowest limb to sea-ice horizon, 2°. The observation was made from an elevation 30 feet above the sea-level. Although the sun was quite too low for reliable work, yet the latitude found by working up the observation was 64° 43′ 45″, an approximation he little expected, as the true latitude is 64° 46′ 20″.

On the 26th, he went out with the natives on a walrus-hunt, to observe the movements of the ice in the Welcome as well as to see the walrus and the hunters The following account of the hunt is largely condensed from his own notes :

At 8 a. m. he left his *igloo*, leading by a long trace-line one of

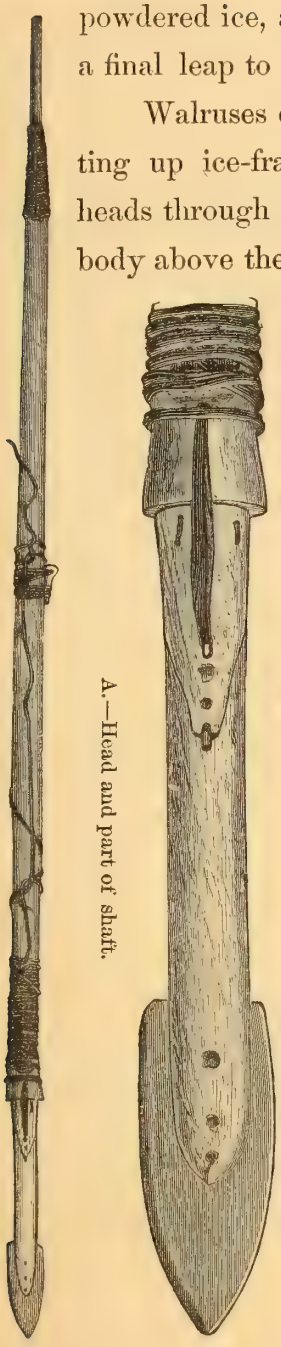
* In connection with notes of like extreme temperatures and the unreliability of both mercurial and spirit thermometers, see "The last of the Arctic Voyages," by Sir Edward Belcher, 1855, pp. 205–208; also, notes of a like character in other Arctic Narratives, including Sir George Nares' "Voyage to the Polar Sea." Hall's own journal has a number of such records; also of his repeated regrets that he had other than standard instruments with him.

the large dogs which were to be employed in dragging the walrus home; several other dogs were led by the Innuits, but by far the larger number were allowed to run loose, preceding or following the hunters. The distance to the walrus-grounds had been for some time constantly increasing as the land-floe widened, and the animals, accordingly, shifted their feeding-grounds to the new ice or to the fissures near its edge. Having crossed the half-mile belt of very rough ice near the coast, and advanced about six miles, Hall came to this edge. A breeze from the north was driving the floe to the southward at the speed of a quick walk, and as it pressed heavily on the edge of the fixed ice, the noise was so terrible that he was at times forced to draw himself back several paces from the point to which he had ventured. For scores of miles to the north and south, the drifting floe was grinding its uneven face against the firm but jagged front on which he stood. Mounting a high ridge of ice, he saw, as far as the eye could reach seaward and up and down the Welcome, a boundless field slowly moving onward toward the south, but crushing to atoms miles and miles of massive ice; now rearing up mountains on mountains, now plowing up acres into high ridges.

Ou-e-la, who had joined him, was unable to reach a large walrus which rose in a small water-space five fathoms off, for the "squeezed, rolling, craunching mass" was working between the floes. He gave a quick signal to those on the drifting floe, and *Ar-mou* and *Ar-too-a* ran rapidly toward the walrus; but just as *Ar-mou* had his harpoon raised, the animal disappeared in the water. Hall and *Ou-e-la* then directed their steps toward the loose pack which the others had already gained, to reach which the sharp eye of the Innuit quickly discovered the only possible crossing. A quick run, a few steps over sludge and

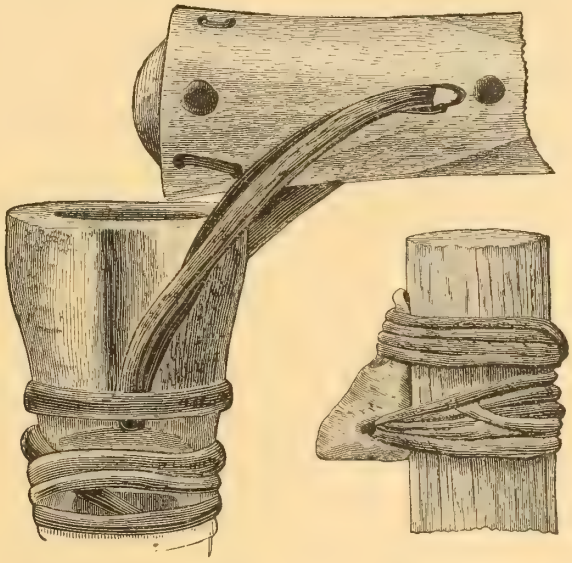
powdered ice, a leap from this tumbling block to that one, and a final leap to the driving floe, brought the two safely over.

Walruses could now be seen in every direction; some butting up ice-fragments from the solid main; some with their heads through the butted holes; some with a large part of the body above the ice. The hunters were busily at work. In one direction two Innuits were under full run for the same blowing walrus, the dogs running around them. All at once these hunters stopped, for the animal had taken the alarm and gone down. In another direction an excited group were seen, one throwing the lance, another holding on a line, one jumping this way and another that, for a walrus appeared to be



INNUIT LANCE AND PARTS—A, B, AND C.

A.—Head and part of shaft.



B.—Joint with thongs loosened, when not in use, to preserve their elasticity.

C.—Knob on the handle to secure a firm hold.

a secured prize. With some difficulty Hall gained this spot, but found

only one Innuit remaining, while the reddened ice and the hole showed a severe conflict. *Shoo-she-ark-nook* had harpooned a very large walrus, and he and Ebierbing had lanced it until it was almost dead. The harpoon, however, slipped out and the animal escaped, Ebierbing losing his lance-head.

An extensive floe of the "walrusing-ice" was now seen shooting over the ice on which they stood, and advancing from the north at the speed of a moderate walk; its thickness was two inches, the same as that on which they stood. They were two miles from the land-floe, upon ice which bent like leather at every step, often yielding two or three inches without a fracture, and it would not do to remain at rest on such ice. They were compelled to be constantly in motion, as the situation demanded.

Hall hastened to a second group of Innuits who were as busily occupied as the first, and in a few moments found himself pulling away with others on a line which was fast to a large walrus. After a few pulls, the half-killed animal came up in a flouncing, tumbling way. He was furiously mad. He had not only been harpooned, but lanced and lanced again and again, so that at every blow, quarts of thick, dark blood were thrown up, scattering itself about, painting the ice, the dogs, and the party with a crimson hue.

What a horrific looking creature a walrus is, especially in the face! It looks wicked, detestably bad. Indeed, a devil incarnate could not have a more repulsive look to Turk or Christian. A hard death did this one die. He fought desperately, but steel and sinewy arms, under the control of cool, courageous hearts, finally conquered. As often as he came up to blow, he was met by the lance of the harpooner, who thrust it quick and deep into the heart and *churned* away until the walrus withdrew by diving under the ice and flippering away to the length of the line. Then, at each new appearance, he would fasten his long ivory tusk (one had been broken off, probably in some fight) upon the edge of

the ice, and turning his eyes around would spend his fury on the first of his enemies who approached. He then again flippered back, and, as the uplifted lance was poised, moved violently forward and upward, throwing forward his head with a circling sweep, as if to drive his tusk to the very heart of his assailant.

What a terrible blow a walrus can deal with his head and tusks! When he came up to breathe, which he did several times through different holes, resting with his tusk hooked onto the edge of the ice, at every breathing he expelled

through his white-walled mouth a frightful stream of hot life-blood, and as the hungry dogs rushed up fearlessly to the very fountain whence the luscious, savory gore issued, the dying walrus quickly raised his head and struck it forward with tremendous force, though to little purpose, as the dogs were too quick dodging the blows. *Shoo-she-ark-nook* at last cut a gash in the neck with his *peloud* (long knife) and thrust the point into the very marrow of the spine.

A fresh opening was now made in the ice, and to this the carcass was towed. Then the line, made fast to the tough skin on the nose, was taken to the point of a small hummock five fathoms distant, and back again through a hole in the same tough skin. With this purchase, five of the party pulled away on the line, gradually sliding the carcass upon the ice. It weighed about 2,200 pounds.

HEAD OF A WALRUS.

This done, each Innuit sprang to the task of cutting open the carcass from head to tail, that it might cover over as large an area as possible on the ice. Yet the moment they commenced to haul up, the ice began to bend, and by the time the walrus was disemboweled, the water covered it 6 inches deep. He was now cut up, longitudinally, into three parts, without being skinned, and while this cutting was going on, the dogs acted like so many devils, and it was impossible, even with a spear, to keep them away from the blood and flesh. The backbone, the lights, and a small portion of the entrails only were thrown away. The edges of the longitudinal parts were then placed together by lines, to give each mass a rounded shape. The paunch accidentally fell in the water,

disappointing Hall, who was thinking of a clam-feast. He had expected to find the paunch well filled, as usual, with clams clean of their shells. He says that rarely is any part of a shell larger than a dime found within the animal. Having often picked up a single shell close by a walrus-hole, he believed that the habit of the animal is to dig but one clam at a time, and then come up to blow and expel the shell. He wonders how it opens the clam so skillfully as not to fracture the shell.

The homeward journey was attended with the usual troubles in crossing fissures and regaining the land-floe, but at 4.30 p. m. the party reached their *igloos*. The dogs, divided into three teams, drew the walrus-rolls, which slid along over the rough ice more readily than a sled *Ou-e-la*, *Ar-too-a*, and *Nu-ker-zhoo*, who had been further to the southeast, joined Hall and his party on the way home, *Ou-e-la* having lost his harpoon in an unsuccessful attempt to secure another walrus.

One animal only having been taken at this time, the hunt was resumed in the closing days of the month, when a very long journey was made to determine whether the animals were deserting their feeding-grounds. Many holes were seen, but no indications of a recent visit, and there seemed no prospect of further success until a gale should carry out the heavy drift, and young ice should again form. For some who were out at this time on the floe, Too-koo-li-too kept a beacon-light burning on the hill-top. The men endured much exposure; when it was dark, they lay down on the ice with the dogs and slept until they became cold, then aroused themselves and walked again till they got warm; alternately sleeping and walking through the whole night.

Chapter V.

WINTER LIFE AND JOURNEY TO THE WAGER.

JANUARY TO MAY, 1865.

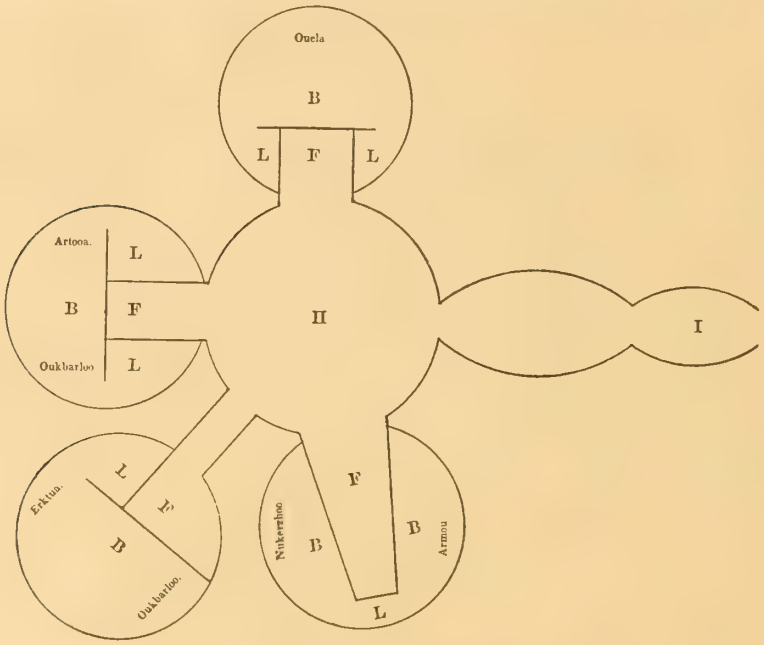
CHAPTER V.

NEW YEAR'S DAY—HALL'S SPEECH—FEASTING—BRILLIANT AURORAS—HE VISITS WITH THE INNUITS THE WHALERS AT DEPOT ISLAND—HOSPITALITIES AND AMUSEMENTS ON BOARD—RETURN TO NOO-WOOK—SHOO-SHE-ARK-NOOK PERSUADES SOME OF THE INNUITS TO ABANDON HALL—SUPPOSED EARTHQUAKE—NEW ORDERS OF THE AN-GE-KO—METEOROLOGICAL OBSERVATIONS—WANT OF CONFIDENCE IN THE INSTRUMENTS—EXPERIMENTS AS TO THE FREEZING-POINT OF MERCURY—SEVERITY OF THE COLD—DIFFICULTY IN MAKING RECORDS—HALL'S BRASS TABLETS—SUPPLIES NEARLY EXHAUSTED—EBIERBING COMES TO THE RESCUE—FLOCKS OF EIDER-DUCKS IN THE WELCOME—NATIVE CUSTOMS IN SEALING—NU-KER-ZHOO'S AND EBIERBING'S ILL-SUCCESS—SUPPLIES OF PROVISION, FUEL, AND LIGHT NEARLY GONE—PLENTY RESTORED—THE SEASON MODERATING—PLAN FOR SURVEY OF THE WELCOME—HALL'S BROKEN HEALTH—THE TIDES IN THE RIVER—REMOVAL TO THE WAGER.

The first day of the year 1865, Sunday, was one of gale and drift, confining all within their huts. To make the Innuits acquainted with some of the pleasant customs of civilization, and, by so doing, further gain their respect and good-will, Hall kept the second day of the month as "New Year's Day." The mean of six thermometers showed a temperature of 62° below freezing-point, and no cloud was seen on the sky. Yet Hall says, "We have all been as comfortable as though within houses of brick in New York."

Too-koo-li-too having informed all the Innuits that calls were expected at the *igloo* from the crest of which the American flag would

be flying, visits were received at a very early hour, the visitors having but a short distance to come through the snow-covered passage-ways which connected almost all the *igloos*. Each one was greeted with "Happy New Year! Happy New Year!" A breakfast of frozen venison, well relished, was followed by another on *tood-noo*, to which young *Ook-bar-loo*, son of *Erk-tu-a*, treated all hands. Hall then set a table made of sea-chests resting on snow-pedestals. It was 25 feet in length,



GROUND PLAN OF VILLAGE IGLOO.
I, entrance; II, central *igloo*; B, bed-platform; F, floor; L, lamp.

extending into the huts of *Ou-e-la*, *Ar-mou*, and *Nu-ker-zhoo*, and having for seats around it snow-blocks cushioned with deer-skins. Flags were draped, and lamps were lit all along the table, and at 2 p. m. twenty-one grown persons sat down to the feast. *Mammark*, a wife, for special reasons, and *Ook-bar-loo*, because still an invalid, being ruled out by custom, ate by themselves.

Vegetable and pemmican soup and sea-bread were furnished, with coffee and isinglass-jelly, and raisins were freely distributed for dessert. Too-koo-li-too waited on the guests. On their rising from the table, many of them placed their hands in front, close by where they had abundantly stowed away the good things, and cried out, "Good! very good!"

At the second table, eighteen children were gathered, while the men retired to *Ou-e-la's* hut to smoke. At 5 p. m., the men were treated to brandy punch, of which a few sips also were offered to the women, as they had asked Too-koo-li-too to let them taste what their husbands had told them of as a heart-warming and happy-making drink. *Erk-tu-a* said she had drink of the same kind many times on board Parry's ships, years before.

The snow-domes were soon after made to ring with the songs of eleven of the women, mingled with the noise of repeated performances by the men on the *key-low-tik*, and followed by the thunderings of a dance. Each woman had on her forehead a bright brass band, while down one side of her face hung the usual long pig-tail adornment; on her breast was a 10-inch square cloth, the ground-work of which was scarlet, and the fringe, scores of long strings of beads and glass buttons; the body of the breastplate being covered with the same. Ebierbing was called out, and responded with a song, which, according to Innuit custom, was his own property—not transferable. He had profoundly attentive listeners, and Too-koo-li-too said she never had thought her husband could do so well.

Hall then gave notice through Ebierbing that he had a speech to make, and Ebierbing made quite a speech in giving the notice. Dressing as a civilized man and taking a central position under a snow-arch,

Hall then "began with his best bow" by expressing his satisfaction at having lived with them four moons as a brother, without either having spoken one bad word to them, or having heard one from them to himself. He tried to impress them with the greatness of his native country, and the protection always shown to its citizens by its one great *E-she-mut-ta* (Chief), enforcing this idea by pointing to the flags around him. Giving them some idea of the Queen of England also, whom he called "the Great Mother that owned all the big water and the land on which they were, as well as the country of Ebierbing and Too-koo-li-too," he turned to these two, and told of their visit to England and to the palace of the Queen. After offering a good deal of wholesome advice to persuade his hearers to have more care as to their intercourse with white men, some of whom, he reminded them, had robbed them of their hunting lines, while others had taught them to be profane, and had introduced disease among them, he repeated in full his reasons for leaving home. "I have come," he said, "to your country to find out all about some white brothers who came to your land many years ago, but who never came back. Many of these brothers had wives and children. Their wives want the Innuits to tell me all about what they know of their husbands. Their children want you to tell me all about what you know of their fathers. * * * I shall want you to help me a good deal; you have told me that you would go with me to Neitchille, and help me to find out all about the *ship* or *two ships*, as some of you have told me, that were two years, as you all say, in the ice near that place. I have powder, balls, shot, and caps enough for us all for three years. All these things I will share with you. So long as I am in your country, let us be as we have been for the four moons just passed—a band of brothers

and sisters. I thank you all very much. Good night." On his concluding a very long talk, of which the preceding is the substance, Too-koo-li-too told Hall that he had much pleased his hearers, who wished him to talk again He had throughout the speech made frequent pauses, so that his interpreters could make him perfectly understood.

The three days which followed the feast had been again days of gale and drift. The meteorological notes of the fourth day of the month read: "This morning the mean of five thermometers is 70° below freezing-point. The registers of three others are *rejected.* One of them, the longest, indicates over 100° below freezing-point; No. 2 registers 110°, and No. 7 will not register more than 77° below the freezing-point. A long and heavy cloud overhung the open water in the Welcome, its vapor looking like steam from a monstrous boiling cauldron."

On the evening of the 7th, at 8.45, a band of children came running into Hall's *igloo*, crying out "*Ok-shum-mung! Ok-shum-mung!*"—(Lights very fine.) He thus describes this aurora: When he registered the thermometer at 7 p. m., the sky was clear and cloudless, and there were no evidences of auroral action. At 8.45 there were three belts of aurora extending nearly in straight lines from near the horizon in the southeast up to the zenith, and thence within 40° of the horizon to the northwest. To the southwest there were belts of aurora, compassing a large portion of the heavens from 15° to 40° above the horizon, these belts having contortions or folds like those in the Constellation, Draco. A fresh breeze was blowing from the north-northwest. Thermometer, 72° below freezing-point; barometer, 30.04.

The rays of the aurora were vertical; it appeared all alive, as if in high glee, dancing to and fro with almost the rapidity of lightning. The three belts extending from southeast to northwest were the most interesting, as they often flashed into the brilliant colors of the rainbow. Each belt occasionally resolved itself into two lines or tiers of rays; as one line would dance rapidly to windward, the other would dance as quickly in the opposite direction. This extraordinary display lasted five minutes—an unusual time. Hall was so impressed with it that he wrote, "If at home it could be witnessed for one moment, one would say, 'I never saw northern lights before.'"

The natives were now looking forward to hunt again for walrus when the ice should form. After securing one animal they would renew their visit to the whale-ships. They pleaded for this visit their promise to assist the captains in getting fresh meat for the crews, and their having received from them many presents without making any in return. Hall's journal says:

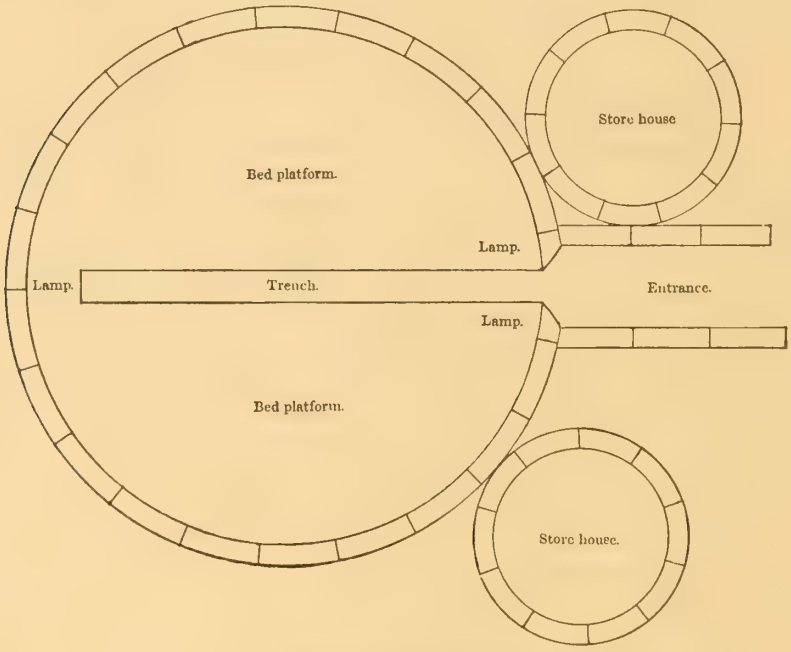
> Innuits are a strange people to deal with; a white man, to get along with them, must have the patience of Job. They are the children of nature, and like to do just as a notion leads them. I learned this evening that half the people of the village, including several of the women, are making arrangements to accompany me down to Depot Island. I must try to check this, for if the Innuits can be induced to be here in the middle of February, I can make my desired journey next spring. *If I had a small vessel* at Repulse Bay, I could learn all the particulars of the Franklin Expedition in two years; with Innuits alone it may take five or more. If I have, however, a team of ten dogs, myself Ebierbing and Too-koo-li-too can reach Boothia Felix in the spring. I regret that I have not a few white men with me.

But a second visit to the ship at Depot Island was arranged. The party was made up of Hall, six Innuit men, Too-koo-li-too, and six other females, a boy (*Oot-pik*), and two babes; all of whom were

seated on three sledges drawn by twenty-two dogs. The boy, *Oot-pik*, had awakened in Hall much interest by his brightness and his handsome figure. When an infant, he was near perishing by being cast off by his parents, who thought that he was near death and would never be other than a burden to them, and his fate was just decided, on their taking fright when his hair began to fall off But *Ar-goo-moo-too-lik* and his wife, who had but one child of their own, by the consent of the boy's parents, promptly interposed to adopt him, and he very soon recovered his full health. Quick to learn, he was now fast becoming ready in speaking English.

The sledge party were well supplied with venison, walrus-meat, and blubber, and reindeer-furs for traffic; besides their own provision and the articles necessary for use on their journey. The thermometer, when they bade good-bye to the twenty-six Innuits left behind, was 72° below freezing-point. Running for a short distance directly south over the land, they struck out for the sea-ice soon found to be smooth, and then followed the coast, with the open water on their left hand at the distance of less than a mile. Large flocks of ducks were seen, and fast-streaming columns of vapor rose vertically into a heavy fog-bank extending north and south as far as the eye could reach. At 3 p. m., leaving the coast and striking the tracks of the party who had gone down in December, they halted for the night at the old *igloo*, which had been occupied by that company, about 17 nautical miles south-southwest from their winter quarters at Noo-wook. A load of venison and *tood-noo* was soon secured from one of the many deposits which had been made in the last season. Two small storehouses were next quickly built near enough to the *igloo* for them to hear any attempt the dogs might make to break into these for the meat; and

while one of *Ou-e-la's* wives shoveled out the snow-drift from the main hut, the other increased the thickness of its walls by banking up more snow on the outside. Hall's offered assistance to the women in this work of using the *por-kin*, (snow-shovel,) was refused by the husband. The drift being thrown out of the way, *Ou-e-la* then entered and made a bed-platform on each side of the *igloo*, dividing the two by a trench a foot in depth.



GROUND-PLAN OF IGLOO.
January 9, 1865. Scale, $\frac{1}{4}''$–12″.

The women and children having then crowded in, made up the beds by spreading over the platforms their furred deer-skins, and lit the three fire-lamps to melt snow for the thirsty. The men on entering carefully beat their jackets and *kodlin*, (outside breeches,) with their *ar-row-tars*, to prevent the warmth of the *igloo* during the night from

melting the snow upon them; for if it again froze upon them it would make the garments heavy as well as cold. This thorough beating re-

AR-ROW-TAR, SNOW-BEATER.
The wood of this from one of Franklin's ships.

quired a full half hour. The temperature within the hut, under the influence of the lamps and of the crowd, quickly rose from 41°, but was again lowered by the venison in the trench, which, when first brought in, smoked as if on fire. To prevent the tongue and lips from being frozen at the first taste of the meat, it was held, for a few moments, in mittened hands and breathed upon, the children's share being kept awhile in their parents' mouths. *Ou-e-la's* half-breed infant, slipping entirely naked from its mother's hood, played on the bed, and on *Ou-e-la's* raising the child to his shoulders, it stood erect, balancing itself, swinging its arms and crowing at the feat.

At 9 p. m., the whole party huddled together for the night, some being compelled to sit upright through the long hours of sleep. Seventeen breathers were sealed up, with a large snow-block, in a hut but 10 feet in diameter! On opposite sides of the trench, nine were on one platform and eight on the other; every one (Innuit fashion) having the head toward the trench.

In the morning, between the hours of 3 and 4, the men waked, ate a quantity of deer-meat, smoked, and again went to sleep. At 5, the whole party were amused to find that the lamp-smoke during the night had covered them with soot. Hall waked with a severe headache from the "excess of carbonic-acid gas generated by three firelights and seventeen persons."

Having re-shod their runners with ice, they now repeated their experiences of the preceding day and made a journey of 26 miles in a south-southwest direction, the children riding all the way, but the grown persons about half the time walking or running beside the sleds.

SEAL-SKIN BOOTS.

BEAR-SKIN MITTENS.

Watching Hall, the natives on this day, and on the days following, thirty times restored his frost-bitten nose and cheeks by their vigorous rubbing. He accounts for this frosting by the fact that for the preceding month he had eaten but little, having lost all appetite for walrus-meat, and by his leaving his "phiz" unprotected, as he wished it to become hardened to cold. His cheek at one time remained frozen fifteen minutes.

In the *igloo* occupied the second night, slabs of frozen *kow* (walrus-hide) were hung on spears running crosswise near the top of the hut. They were thus partially thawed by morning, when the dogs were called in one at a time and fed on short strips of the meat.

On the third day a furious gale was encountered, which increased below Cape Fullerton, compelling a halt at 2.15 p. m., at the end of a journey of 26 miles, during which it had been necessary to encase the children in reindeer-skins, and lash them on *Ou-e-la's* sled.

The first stroke of the spear in testing at this place the snow and

ice for a new hut now struck the dome of a seal *agloo*, the inclosure in which the young seal is born and reared. It was oval, its diameters being $4\frac{1}{2}$ and $5\frac{1}{2}$ feet, and its height from the floor of sea-ice to its dome, 2 feet. Those which Hall had before seen were circular. The opening for the seal to come up into this snow-dome made by her through the sea-ice, was near the end of the longer diameter.

The party found their resting-place for this night warmer than that in their first *igloo*, which they said was because this hut was entirely new. They were, however, several miles from land, and in danger of being driven by the storm into the broad Hudson Bay.

On the two following days the wind was fair, and the thermometer ranged from 36° to 34°. On the 12th, their fourth *igloo* was made on a small island 28 miles due west of their third. The land on their right was too low to be seen, but, according to the Eskimos, it was marked by deep inlets and bays, one of which extended to the north from 50 to 75 miles. On the left a ridge of hummocks intervened between them and the open water, a distance of from one to three miles. Hall expresses a desire to make an accurate survey of this whole coast-line, even from York Factory to Repulse Bay; as, from what he had seen, he judged that no chart gave anything like an accurate delineation of it—certainly none showed the coast from Cape Fullerton to Depot Island. On account of the shore being very low and nearly uniform, a survey would have required much time and care.

At a late hour of the next day, *Ou-e-la*, mounting a hummock, pointed out the masts of the whale-ships, which his quick eye discovered when Hall could not see them; they appeared only as sharp

needle-lines in the distance. The dogs were now urged to their utmost speed, but the storm-clouds shut in upon them before Hall could take a compass-bearing which might have saved some hours of wandering. Traveling then became exceedingly difficult, until, according to Eskimo usage in such cases, a woman was selected as the guide. One of *Ou-e-la's* wives well executed this task, although for a time misled by a light on *Ar-goo-moo-too-lik's* sled which was seeking to regain its track. This light was from a piece of moss at the bottom of a dish containing a little oil; at first she believed it to be on the ships. Regaining their course, the party soon saw a signal swinging high on the mast of the Monticello, its crew having heard the cries of the dog-drivers and dogs for half a mile back.

Hall had closely shaved his hair and beard for this journey, yet devoutly wishing when he cut them that the ice could have been kept off, that they might have been saved to warm him. He was distinguishable from the rest of the snow-covered party by his voice only; but was soon recognized by Captain Chapel, and welcomed to his old quarters on the ship. After partaking of the first hospitalities of the Monticello, and seeing that his party were properly cared for, he turned into his bunk, expecting a full season of rest. But the change from the *igloo* was too sudden; he slept none during the night. After his next meal he could not help entering in his journal that he "liked civilization food" as well as any man, and it was only through his determination to fathom the mystery relative to the lost expedition that he could possibly submit to live the life of the Eskimos as he had done and as he must still do. He congratulated himself that he had not forgotten how to use his plate, knife, and fork after 135 days' disuse of said articles.

In this harbor, a little more than a mile west of Depot Island, four whalers besides the Monticello were anchored within rifle-shot of each other; these were the George and Mary of New London; the Black Eagle and the Antelope of New Bedford; and the Concordia of Fairhaven, Mass. Each was banked up with snow six or eight feet thick and nearly up to the gunwale, the upper deck being well housed. On board the Monticello, although but little coal was used, the temperature was kept above 32° throughout the vessel. Five other whalers, including the Ansell Gibbs and the Tender, Helen F., were anchored in a commodious harbor completely land-locked on the northwest side of Marble Island, an islet about 15 miles in length, lying 12 miles off the coast.

On board all of these vessels the amusements usually gotten up by Arctic voyagers for maintaining the cheerfulness and health of their crews were at this time in full play, and were generally of a theatrical character, varied by masked balls and by several forms of the dance. Among the exercises of speaking and singing, the memory of Franklin and the fate of his expedition were not forgotten. The new-comers were particularly pleased with the farces, while Too-koo-li-too, in her turn, gave the ships' companies great satisfaction by her skill in a Greenland dance.

Hall experienced a full share of the hospitalities frequently reciprocated between the vessels at the two islands. The meat which his party had brought down with the design of dividing it among the five ships at Depot Island had been pounced upon by one crew. But the supply of fresh meats was plentiful on all the ships, and the condition of the musk-ox meat previously obtained, and of the hogs brought out from home, was a good indication of the care taken by the whalers

against scurvy, cases of which were very few and of the lightest form. His first disappointment was the news that both the Antelope and the Black Eagle had been in Repulse Bay in August previous; that the land was then covered with reindeer, and that these ships had looked for him, and would probably have remained there all the winter had they found him. These vessels had seen many whales, and each ship had secured ten; all which had been seen, were small. Hall's disappointment was followed by his entire failure to obtain now a promise from *Ou-e-la* of a dog-team for his spring sledge journey, or the loan of a team from the ships; they would need all their dogs for the early spring floe-whaling.

During his stay on the whalers, unwillingly protracted to the 10th of the following month, he spent much time on the volumes of his Arctic library, left on the Monticello in August; especially on those works which would best aid him on this voyage and on his *proposed future* voyage to the North Pole He did not fail to record some strange reading of the thermometers, together with interesting auroral and other atmospheric phenomena. On the 15th, the mercurial thermometer on the Monticello's mainmast read, at 7 a. m., — 44°; at noon, — 43°; at 7 p. m., — 45°; while his own ethereal thermometer read, at the same hours, — 37°, — 36°, — 38°. He believed the last three records too high. He says:

> I am convinced of this by the test I lately made at my winter quarters by exposing, one night, a dish of pure mercury to the out-door air. My thermometers are numbered 0, I, II, III, IV, V, VI, and VII. In the morning, when my No. 0 thermometer stood at 40°.5, the mercury was frozen so hard that only the sharp nails of the finger could be made to penetrate it. Undoubtedly 5° or 6° *higher* temperature would have left it in a frozen, *unfluid* state. Some mercury will freeze at — 38°; pure may not at even — 40°.

In Chapel's thermometer the mercury would not run down the tube while inverted until a few degrees of warmth were communicated to it, but the thermometer continued to act. I am satisfied that a good mercurial instrument will indicate the true state of the atmosphere several degrees below the temperature of the mercury with which it is filled.

In one of his leisure hours, revolving in mind the problem of determining time at the North Pole, he came to the conclusion that with the help of an English nautical almanac, Greenwich time could be found there by star occultations or by the eclipses of Jupiter's satellites, but perhaps oftener by lunar distances. He had at first reasoned that at a place where there could be no such thing as a day, and no cardinal point but one; where all the heavenly bodies revolve parallel to the horizon, with the exception of the change caused by the variation of declination; where there is no meridian, or rather where every meridian is:—it would seem impossible to determine time.

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* There is one great difficulty that will be experienced by whomsoever shall reach the Pole; that is, *there will be no means for determining time by astronomical observations* How can there be when all the heavenly bodies in view of the observer while at the Pole are continually revolving about him parallel with his horizon. The only exception to this is simply the variation of declination. At the *North Pole* there can be no *upper or lower* culminations of the sun, moon, planets, and stars, for it is a point where there is *no meridian;* then it follows that there is no day there—no solar day, no siderial day, no *lunar* day. Why no day? "Because a day is the interval time between the departure of a heavenly body from any meridian and its succeeding return to it;" and there being no meridian at the North Pole, there can be no departure from or return to one by a heavenly body. At the North Pole there is no meridian; it is a point nevertheless where the meridians of every spot on the face of the globe meet, or, in other words, where they terminate to 0 (zero or nothing). But a *new idea had just struck* me. Time can be determined at the North Pole by *lunars*. Having a Nautical Almanac and the usual instruments, it can be easily done. Take one observation of the sun's altitude, or of either of the planets or stars used in *lunar* observations; one altitude of the moon, without any particular care in noting the *exact* time when these two observatiens are made; then carefully observe the angular distance of sun and moon, or moon and one of the planets or stars used in lunar observations, and note the time.

[I did not mean by my references to determining time at the Pole that this will be North Polar time or mean time. Certainly not, for this, as I understand the matter, would be absurd. To say that such an event occurred at such an hour North Pole *time* or *mean* time would be out of all reason].

Having made the usual observations in taking a lunar, work these up. The true distance of the moon from sun, or planet, or star being found, proceed with the use of the lunar tables as in lunar work. The result will be Greenwich time if the British or American Nautical Almanac be the one used. I do not consider it necessary that one at the Pole should have a chronometer

On the 10th of February he began his return journey to *Noo-wook*, leaving behind him, as he had unwillingly anticipated, the larger number of the natives. They had made themselves very useful in hunting for the crews the seal, the fox, and the bear, with the usual varied success and excitement of the chase. *Ar-mou* at one time going alone in pursuit of a large polar, harpooned him, but, in his determination to secure the animal, he was himself fairly dragged over the thin ice to the sea and nearly drowned. *Ou-e-la* and *Ar-mou*, before going down in December, had agreed that they would early return. But now, with their wives and friends, they were not unwillingly detained by the captains. On bidding the whalers good-bye, Hall was furnished with some substantials and even delicacies; for he was unable to conceal the fact that he considered some "civilization food" as almost a necessity. After the play of Damon and Pythias, given in his honor on the previous evening, he made a speech to 140 seamen gathered on one of the ships, complimenting the courage and hardihood of the American whalers who succeeded in finding harbors in a

that had been adjusted to Greenwich or to any other time in making his lunar observations. Indeed, it may be supposed that he knows nothing of time save the year. By the observed altitude and variation of declination of the sun or one of the planets, he can determine the month of the year, and by the lunar distance the day of the month, and by *repeated* workings of the lunar observations can determine Greenwich mean time as approximately as lunars will admit. Having Greenwich mean time by it, one easily gets Greenwich apparent time. The party now at the Pole, we will say, is desirous to proceed toward Greenwich. He consults his watch, which is now at band and in running order. A good time-pieee should, however, be in hand at the time the angular distance of the moon from the sun, or the moon from such other heavenly body as may be used in the lunar observations is observed, and the exact moment noted. No matter what hour this instrument is set to before commencing the observation, the result of the lunar observations will show how much too fast or slow the chronometer is on Greenwich time; and thus one has in hand the instrument to tell him at any moment, therefore, the Greenwich mean time.

When the time-piece indicates the apparent time of Greenwich of 0h. 0m. 0s., the sun (we will suppose it to be summer in north latitude) is, on the meridian of Greenwich, *exactly in the direction of Greenwich.*

The observer at this moment directs his compass-sight and takes a bearing. He proceeds, as he leaves the Pole, not only south (there is only one cardinal point at the North Pole, which is south), but on the *meridian of Greenwich.*

Greenwich mean time may be determined by an occultation of a star or of a planet; also, by the eclipses of Jupiter's satellites. Jupiter, however, is alternately in sight and out of sight for six years at a time at the Poles of the earth. (Journal on board the whaler at Depot Island.)

locality in the bay where a like success had not been met with by H. M. S. Griper in 1824.*

Beginning his journey at 8.30 in the morning, he was accompanied by *Shoo-she-ark-nook*, *Ook-bar-loo*, Too-koo-li-too, and a girl named *Now-yer*. Their dogs numbered ten. After traveling 27 miles in an easterly direction, they again quartered for the night in an *igloo* on the sea-ice. The distance made on the second day was about the same as that on the first, but on the third they lost their way, Hall's compasses proving totally unreliable. He was glad again to trust himself to the skillful guidance of the Innuits. Turning next to the north they were met by a furious gale from the northeast, with thick snow, shutting them up a second time on the ice of the Welcome, but the next morning all was calm and "clear as a bell."

They reached *Noo-wook* on the 14th.

Hall had suffered on the journey by the strange conduct of *Shoo-she-ark-nook*, who had allowed each of the party but a few ounces from the abundance of walrus-meat packed on the sled, although he ate pounds of it himself and fed it to the dogs, and although Hall had freely shared with him all his own bread and coffee. To keep up his strength and warmth, for the supply of which to an Arctic traveler bread and coffee are not enough, he had submitted to eat the unpalatable and tough *kow* (hide of the walrus).

In accordance with the expectations he had held out to the natives on New Year's Day, he now distributed to them the presents which he had obtained from the ships. The bread which *Ar-mou* had sent back to his family had unfortunately been stolen by the dogs on the jour-

*Lyon's journal (p. 110) says: Marble Island, according to Middleton, is the only spot along the whole American coast from Churchill upward which affords tolerably good anchorage. There is an excellent harbor in the island, but its entrance is dangerous. At spring tides there are only 13 feet on the bar. The Griper drew 16 feet.

ney. The natives were living on short commons, because of their recent ill success in hunting. Ebierbing, on the day following, while on an unsuccessful walrus hunt, killed one of a large flock of eider-ducks (*Mei-tuks*), of the weight of which Hall satisfied himself by first balancing it with the two books "The Fate of Franklin" and "Burritt's Geography of the Heavens" in a tin kettle, and then balancing these volumes with a bag of rifle-balls. He found the weight of the duck to be that of 312 rifle-balls, = 6 pounds. The bird had in its gizzard snail-shells in perfect condition, which were preserved for examination as to their species.

On the 17th, at 50 minutes past noon, a low rumbling noise was heard, resembling that of a train of cars slowly crossing a bridge and dying gradually away. The Innuits said that a like noise had been heard twice during Hall's absence, coming from the southeast, and continuing for a long time, and spoke of it as *Toon-gwa*, the bad Spirit, shaking the earth. During a new performance by the *an-ge-ko*, to which he summoned all hands at midnight, he issued the order that the *kook-bigs* must not be emptied, nor the frost scraped from the ice-windows of the *igloos* till sunrise. This order, however, was accompanied by another decree for an exchange of wives; and on his own wife's refusal to go to Ebierbing's hut for this purpose, the *An-ge-ko*, (*Ar-too-a*,) beat her most unmercifully.

A few days after, fourteen of the Innuits moved a few miles southward, ostensibly to be nearer the seal and walrus grounds and their depositaries of reindeer-meat. About an equal number, including his two fast friends, remained with Hall. *Shoo-she-ark-nook*, through some ill feeling, had endeavored to persuade every one to desert him. During this native's sickness and that of his son, Hall had closely watched both, and saved them when at death's door. For

a few days, now, he was placed under serious apprehension that *Shoo-she-ark-nook* would induce all to leave him with Ebierbing and Too-koo-li-too, to get along the best way they could *alone*. The fellow was, not long after, brought to terms when his own necessities returned upon him.

Ebierbing, on the 19th, shot a seal weighing 125 pounds. It was too fat to sink, and its blubber made more than four gallons of oil. The meat was divided equally among all the families. Having no other means of securing a second seal which he had killed at too great a distance from the land-ice to be reached by his harpoon, he had endeavored to lodge in its body a line shot out from a rifle-grooved ball; but, each time, his line broke. His companions, talking over the matter, returned to the spot with Hall, and found the water now covered with a thin coat of ice. Lashing together a number of poles and flats, and making of them an *oonar* (seal-spear) a hundred feet in length, they fastened to its end a harpoon carrying a seal-line, and then pushed this long pole through a hole in the ice toward the seal. It required skill to direct it, as the sea-ice is not transparent, but on the second attempt, after sunset, the seal was reached, and the harpoon withdrawn an arm's length and struck into the animal by a skillful blow. Snow was next kicked upon the body, and then thoroughly rubbed off with the feet, to prevent its hairy coat from being loaded with ice. A hole was cut in its nose and a line passed through it, by a loop of which, thrown over Hall's shoulders, he dragged it to his *igloo*, sharing it equally with all.

On the 24th and 25th a severe gale prevailed from the north-northwest, the thermometer ranging from $-23°$ to $-34°$, and the snow drifting thickly. Over the Welcome, the fog-bank showed that the ice

had been driven off shore. The mean of the five thermometers at 7 p. m., when the gale had entirely subsided, was $-39°$; but Hall had now further reason to place no confidence in two out of seven instruments, one of which stood at $-100°$ and the other at $-75°$. Shortly after this he wrote: "It is annoying to have but one of nine thermometers, right. But by taking even one to the United States, and having it compared with a standard, with my data, all the observations can be worked up to said standard."

During the night of the 26th his five self-registering thermometers read, $-48°$, $-46°$, $-48°$, $-48°$, $-52°$. At 8 a. m. he experimented with the mercury given to him by Mr. Green, one of the instrument-makers of New York, for his artificial horizon. Pouring some of this into a dish near his thermometer, he found the mass quickly frozen, small spherical drops remaining fluid until the pressure of a pencil changed their form. When the mass of the mercury again became fluid, or nearly so, with the rising temperature, these globules remained solid.

The following table gives the results of his observations; the thermometers numbered I, II, and VII, at first being below the marks, were not read:

Time—Feb. 26.	Thermometers numbered—								Mercurial test—state of exposed mercury.
	0.	I.	II.	III.	IV.	V.	VI.	VII.	
h. *m.*									
8	−38°	Below all marks.	Below marks.	−37°. 5	−38°. 5	−38°. 5	−44°	Below marks.	Hard frozen.
8 30	−37°. 5			−36°	−38°. 5	−38°. 5	−44°		Hard frozen.
9 50	−36°		−83°. 5	−34°. 5	−38°	−37°. 5	−42°		Hard frozen.
10 10	−35°		−80°	−33°. 7	−36°	−35°. 5	−40°	−41°	Hard frozen.
10 25	−33°. 5		−77°	−32°	−34°. 25	−34°	−38°	−39°	Yielding a little.
10 45	−32°	−90°	−73°. 5	−30°	−33°	−33°	−36°	−37°	Semi-fluid, half of it.
11	−30°	−86°	−72°	−29°	−31°. 75	−31°	−35°	−36°	Nearly fluid; some still solid.

These experiments still further confirmed his uncertainty as to the true freezing-point of mercury, and he was at a loss to know how to correct his thermometer-register. On the following day he continued his experiments with frozen mercury, the lowest temperature during the night having been $-39°$; and at 7 a m his thermometers standing thus: $-36°, -90°, -72°, -34°, -36°, -36°, -40°, -42°$. An attempt to mold mercury into a bullet did not meet with success. The temperature of the freezing mass now differed from what had appeared on the previous day, and he began to question whether its repeated freezing does not affect the case, or whether the discrepancies noted had not arisen from some lack of watchfulness needed to prevent the communicating of heat to the thermometers from his own person.* He says: "Why should I not be in doubt about the freezing-point of mercury when masses freeze and little rain-drops of the same metal from the same jar remain fluid? Admitting that mercury freezes, by a

*These notes of Hall's experiments may be compared with the following, to be found in the "Results derived from the Arctic Expedition, 1875–'76" (Parliamentary Paper C, 2176). Captain Nares says, on p. 107:

"The spirit and mercury thermometers were fixed alongside one another in the same screen, and, being read off every hour during the winter, were found to agree very well together until the temperature fell to about $-44°$, when, on the temperature reaching a certain point between $-45°$ and $-46°.5$, the mercury fell suddenly to a point in the tube which would be about equal to $-60°$ had the tube been graduated.

"While in this state, the mercury could be easily tapped down to a lower point in the scale. It appeared to be very brittle—that is, as the end of it reached the narrow passage leading to the bulb, small particles broke off and found their way through. The stream was not continuous.

"When the thermometer was left quite still, no matter how cold the atmosphere was, the mercury never sank lower in the tube than about $-60°$.

"When a thaw set in, the first effect was to melt the mercury remaining in the tube, which fell into the bulb out of sight, the mercury in the bulb always taking a longer time and a higher temperature before it became fluid. By the observations made, this temperature is about $-35°$, but length of time may affect the actual degree at which the mercury would become fluid.

"Occasionally, when the mercury assumed the fluid state, the expansion was apparently a sudden action, as the mercury in the tube of the maximum thermometer, lying in nearly a horizontal position, was projected along the tube, and registered a much higher temperature than that of the atmosphere; thus, on February 22 the maximum thermometer registered a temperature of $+51°.5$, and on March 30, $+3°.0$, both readings being higher than the actual temperature experienced." During the 24 hours preceding the first of these observations, the weather was stormy, and the thermometer may have been shaken.

standard thermometer, at — 40°, then my thermometer No. 0 does not register when at — 35° low enough by at least 5°, for at $10^{h.}$ $10^{m.}$ a. m. frozen mercury remained solid and fluid mercury froze."

He now made his own records with great difficulty; his inkstand occasionally was warmed beneath the fur clothing of one of the Innuits, the pen was constantly warmed by breathing on it, and the ink in his pen breathed upon as frequently. His fingers and thumb he warmed by a small lamp, which also heated two metal plates* alternately placed underneath the leaf on which he wrote. The ink was obtained from a deposit of icy ink-blocks outside of the *igloo;* slices from these were chipped off, crushed, and thawed inside. In detailing this, and speaking of his frequent exercise necessary to keep his blood in motion, he says, that "although apparently warmly dressed in skins from head to foot, (his) vigilance in dancing on the snow floor of the *igloo* to keep his blood in circulation was the price not only of liberty, but of life itself."

The supply both of meat and blubber for oil had now become very low, suggesting grave apprehensions of want. The seal-meat was all gone and the walrus-meat nearly devoured. The blubber, so necessary for the lamp-light and for melting snow for their drink, was consumed. The only supplies left were in the reindeer deposits, which, in the severity of the cold, could scarcely be opened; and their *tood-noo*, without which the meat was poor food, was also gone. "Oil

* His account of these metal plates is of interest: "I have before me a lamp with two wicks kept constantly burning. The brass sheets are 10 inches each by 5; and while one is heated the other, which has been made hot, is under the leaf on which I write, warming it; this, in turn, keeps my fingers warm and the ink from freezing in the pen, and dries the writing. Changing the plates after writing on each half a dozen lines, I am able to make up my journals, the thermometer at my side showing 42° below the freezing-point. It is a plan of my own."

[The plates, with the pen, inkstand, and other relics, were at the Arctic exhibit put up for the United States Naval Observatory at the Centennial, 1876.]

was what they most needed, not only for their fire-lamps, but for the *human stoves.*" Ebierbing, however, was now again successful in the capture of a full-grown seal weighing 250 pounds. Hall went down the coast a half mile, and attaching a dog-team to the seal, in fifteen minutes had it in his *igloo*, and shared it all around with his friends, including *Shoo-she-ark-nook*. *Nuk-er-zhoo* brought in a load of venison from a distant deposit. Plenty came again. February, therefore, closed with widely-extended moss-wicks on all their fire-lamps, once more aglow;—with the stomachs, which had nearly collapsed, again filled to repletion. Sorrowful faces and silence then gave way to smiles and to merry voices.

Within the first few days of March, *Shoo-she-ark-nook* and his family made their long-talked-of move to a new point north, half way to the Wager River, expecting to catch salmon through the ice and to gather supplies of reindeer from some of their own deposits. The conduct of this Innuit had, for some time past, given uneasiness, small tools and other articles which had disappeared from the passage-ways usually considered safe, having been found in his *igloo;* besides which, serious apprehensions were renewed that he was again persuading the rest of the natives to desert Hall. On parting, however, he promised to give his assistance on Hall's proposed journey to Repulse Bay; and, not long after, he sent back to him a very acceptable present of frozen salmon, asking for tobacco, and receiving it cordially, together with blubber, medicine, and some food.

Hall, with Ebierbing and Too-koo-li-too, now entered a new *igloo*, called the "seventh encampment," distant 120 fathoms further south. This was to gratify the superstitious notion that since so few of the people now remained in the village they must abandon all their old

huts, or failure in the seal and walrus hunt might ensue. The new *igloo*, made of coarse-grained blocks, with but little depth of snow for its floor, was particularly cold and uncomfortable, until embankments were thrown up outside and inside. Too-koo-li-too had lined it with the sail and jib of the Sylvia and with ripped-up canvas bags, et cetera—the et cetera being chiefly the petticoat which she had worn when in the United States.

The 5th day of the month was again one of storm, the gale becoming almost a hurricane. The storm-wind was cuttingly keen. Hall wrote in his journal, "King Cold, even when severest, is harmless in a calm; but when he gets the winds of old Boreas and charges them with his mighty power, man turns his face for shelter." Taking the mean of the readings of his "0" thermometer for the previous evening with the three of the day, and applying the correction of adding $-7°$, which his experiments with the mercury had prompted him to do, he found the temperature in the gale to be $67°$ below freezing-point. The drift filled the air so that one could see nothing a few fathoms off, and yet the sun peered dimly through it the whole day, so that the terrific gale was hugging the earth. Probably a few hundred feet above, all was sunshine. At night the feeble rays of the moon pierced through the swiftly-moving white pall which enshrouded the land.

When writing his journals now the greatest difficulty was, not to get the ink but his thoughts to flow. "When mechanical contrivances are to be attended to every few moments, and when King Cold is continually thrusting his stinging needles into the toes and fingers, and finally chills one through and through, it is utterly impossible to think with freedom. While writing, one becomes lost in a labyrinth of stiff-

frozen ideas, from which he can escape only by the most violent physical exercise."

On the 6th, after a protracted and severe struggle with a walrus found sleeping on the drifting ice, seven miles out, Ebierbing and *Nu-ker-zhoo*, after freely using their harpoons and lances, at last pierced his neck with a well-directed bullet. Night coming on, the two left their rifles on the ice and returned to their huts. The next day, Hall with three of his friends made their way over the rough sea-ice—a temper-trying field of chaos made up of piled blocks of every conceivable shape, size, and position, fractured and raised by the pressure of the floes upon such ice as had become fixed. They found the creature still fast to the line by which Ebierbing had tied him to a hummock; but the current, at the last, swept this line under the land-ice, broke it, and took from them their prize. Four flocks of the eider-duck (*Anas mollissima*) were seen, which they estimated contained 1,000 each, the males predominating. Hall notes as of interest to naturalists, their wintering in very large numbers in waters of such high latitude as the Welcome.

The customs of the natives in sealing during the winter are detailed as follows:

When the hunt is prosecuted over seal-holes, no seal is seen by the sealer until he has made fast to it. The locality of the hole is found by a seal-dog only, and the sealer then proceeds to prospect with the long spindle shank of his *oo-nar*, piercing the snow until it penetrates the exact spot of the hole which leads up through the sea-ice. Then, with one eye, a sight is taken through this spindle-shank hole, to determine whether it is about the center of the seal-hole, as this is the point where the spindle-shank hole must be located.

When the seal comes to this hole to blow, the listener prepares himself for striking his harpoon vertically through it; and on the second or third puff

or blow of the animal, down goes a strong muscular arm, carrying a harpoon into its head, neck, or back. When the seal dives carrying out the length of the line attached to the harpoon, the sealer retaining firm hold of the other end, removes all the snow from over the hole, draws the seal into it, and drags him out.

Two such seal hunts now followed. On the 8th, *Nu-ker-zhoo* took Hall with him three miles out from the shore to a seal-hole which he had discovered, and about which he had built a snow-wall 5 feet in diameter and 5 feet in height on the north side, but 18 inches only on the south. This was for his protection from the wind while watching.

Into this hole, at the spot marked on his previous visit, *Nu-ker-zhoo* ran a whalebone rod, which, by striking ice, showed that some time had passed since the seal had been there; drawing out the rod and smelling it, he whispered "*tepid*" (stink—*bull*-seal). Returning the rod to the same little hole, he carefully scraped away the snow from around the rod, so as to leave only about 6 inches over the seal-hole. He then drew out the rod and placed the end of the wood-part of his *oo-nar* directly over the rod-hole. Holding this perpendicular with one hand, he used the other in packing snow around it till he had returned the 10 inches of snow over the seal-hole which he had scraped away. Then the spear-handle was lifted up gently, which left an inch-square hole; this was to be his mark and guide for his harpoon in striking the seal as soon as he should hear it. He then ran the little rod down through the dome of the seal's house (or as it may be called *agloo*, for it is really a small snow-hut) to determine the depth of the snow over it; for it was on this his feet were to rest while watching.

The next thing was to prepare himself for spending the whole night in perfect silence. He threw down a piece of furred deer-skin

to answer for a cushion and to keep the least noise made by his moves from being communicated to the snow. Then, to keep his feet warm and close together, he drew over them a short bag of reindeer-skin with the fur inside, and, to prevent still further his making the least noise while sitting, or when he should rise to strike, he tied his legs together just below the knees and his frock-tail close around his body. The last act was to place his *oo-nar* with harpoon and line, on two pegs carefully stuck into the snow, on his right hand and on the left, just so far in advance of him that when bending forward he could touch the spear. All was now ready for unbroken silence. Whispering back and forward the word "*Ter-bou-ee-tie*," (Good-night,) Hall took his leave; for *Nu-ker-zhoo* had invited him to be his companion to this point only, since by his now leaving the *agloo* the seal would suppose that no one was left behind.

The native, however, failed to secure a captive, and returned at the end of a twenty-four hours' watch only to say "no visit had been made by the seal to his hole during all that time." This had been his second disappointment, for on his last hunt, when he heard the blow and was throwing his harpoon, a mitten fell from his belt on the roof of the *agloo*, frightening off the wary seal.

Hall next accompanied Ebierbing to a seal-hole which he had found about three miles off, and over which he now expected to watch during the night. With his knife, Ebierbing cut down into the snow-covering, repeatedly smelling the snow until he satisfied himself that the seal had been there within a short time. He then scraped away the outside snow which was about 5 inches thick, down to the thin, icy crust forming the coating to the seal's breathing-hole. Into this he made a very small cut, but on looking through, he discovered that

it was about 4 inches on one side of the center. Filling this up carefully with a small piece of snow, he made another cut, which he found to be central. A small hair from his *koo-li-tang* (outer reindeer-frock) having fallen very near the hole he had made, he at once stopped, and with the greatest care removed it, remarking to Hall that the seal would "smell um quick, and away it go." Then cutting a block of snow an inch square and 8 inches long, he set it up over the last hole, and filled in about it with loose snow, leaving 3 inches of it above the surface for a mark by which to direct his harpoon when the time came to strike. Seated on a single snow-block, with his back to the southwest wind, he tied his clothes about him, as already noted in *Nu-ker-zhoo's* case, and commenced his weary watch. He did not, however, build a wall around the hole, telling Hall that his own countrymen at Cumberland Gulf did not do this for fear of frightening the animal by the noise made in putting it up. Hall left him to his lonely watch, the temperature of the air being — 34°. Joe was as unfortunate as *Nu-ker-zhoo* in having no visit from the seal to his hole; but he shot one in the open water, yet found it impossible to secure it.

EBIERBING GOING OUT ON HIS HUNT.

The Aneroid indicated, on the 10th, a fall of 4½ tenths of an inch. The wind again blew with almost the force of a hurricane, and one

could scarcely see an object at arms-length through the drift. The Innuits made no attempts to leave their huts, and Hall, though succeeding in getting his thermometers from the outside of his own, could read them only under its lee. It cost him three severe exposures to find them, but seizing one after another he worked himself back with them on his hands and knees.

The unsuccessful hunts were trying to all. Even a fox escaped them, coming unharmed through a pack of the dogs which did no more than stare at it. "Had it been a polar bear or a musk-ox, they would have been all life, vigor, and teeth." In the absence of the men, Too-koo-li-too gave chase, but her spear failed to reach the prey.

The want of blubber for light and heat gave great uneasiness, and provisions were again nearly exhausted, when, on the 14th, *Nu-ker-zhoo's* sister, *Tuk-too*, brought in on a sled from an abandoned *igloo* a few old reindeer heads and legs, which had been cast aside out of the reach of the dogs for just such a time of want. These were soon made to give up every particle of their life-sustaining substance, whether of putrid brains, the now bitter marrow, the hard fibers, tougher sinews, or the few remaining patches of skin around the noses and hoofs. To crack the reindeer-bones by an iron tool during the walrus season was against Innuit law, yet Ebierbing ingeniously escaped censure by holding the hatchet only, while Hall struck the bones across its face.

The times were dark enough. The journal says.

> How cheerless is our *igloo!* The moss wick of our lamp, which, when we have our full supply of blubber, gives a continuity of flame of 2 feet 6 inches, is narrowed down to a simple wick point, and makes the gloom more dismal than total darkness. Long and cast down faces are now faintly seen that otherwise

would be veiled from us. Our huts are sad, our voices almost hushed! But away, away, thou fiend of Despair! This is no home for you. We are the children of Hope, Prayer, and Work. God is our father, and better times will come.

Hall had been busily writing letters to the Journal of Commerce, and the New York Herald, and to friends at home; but he had to drop the pen for the rifle, to get food.

On the 16th he hopefully led out his company to the walrus-grounds, with dogs and sledge, across the rugged ice of the Welcome. Too-koo-li-too, as usual, had been up, the first of the party, giving notice there was little wind, and that, from the northeast; and Hall, feeling, he says he knew not why, that before night they would have success in the hunt, took out with him all hands, including *Ar-too-a*, who, through his own necessities, had returned to the village. They secured one great seal and a large walrus, and made a deposit of them until the following day.

At 6.45 a. m. of the 17th, in the midst of a furious snow-storm, they started to retrace the path of this hunt over a seemingly endless extent of hummocks, and by 3.30 p m. were back safe in Hall's *igloo*. Their sled was demolished, their shins badly scarred, and their temper "nearly about broken into cursing an icy world in general"; but, having now a good supply of food and fuel, Hall wrote "*Heaven be praised!*" He was able, chiefly through Ebierbing's industry and skill, not only to help some of those who had lately left him and were now in want, but to send to Captain Chapel a large piece of the *ook-gook*, to be divided among the five captains. The temperature was beginning to be less severe, the thermometer rising at midday to 10°. Some snow was taken off from the embankments outside of the *igloos*. Food, light, and warmth were again within.

On the 20th, *Nu-ker-zhoo* left the village for a third visit to the whalers, bearing letters to Captains Chapel and Tyson, with others to be forwarded to Mr. Grinnell and Mr. Brevoort. Two days afterward, a couple of *Nu-ker-zhoo's* dogs ran back to the village in full harness, their trace-lines appearing to have been cut, as is usual on sighting a *ni-noo.* At such a time the dogs are put in full chase, and when within a hundred fathoms or so of this game, the driver cuts the trace-line of the leader, and then in a few moments the trace of the next dog, and so on, until all are free from the sledge. The dogs, as their lines are cut, bound away for *ni-noo,* and soon bring him to bay, when the hunter prepares himself as best he can for his encounter with the ferocious beast.

In company with Ebierbing, a few days afterward, Hall himself came upon the tracks of a mother bear and cub about half a mile from the coast, and followed them until they were lost in a belt of freshly-broken ice. He notes that the custom of the Innuits on first sighting the tracks of the bear, the musk-ox, or the reindeer, is to feel them, closely placing the fingers here and there on the raised, or, rather, less impressed parts of the snow. In this way the hunter determines how long they have been made, and if they are fresh, he goes in for a vigorous chase. Hall and Ebierbing on their chase could readily discriminate between the leisurely-made steps of the mother and her young, the halt which she made to nurse her cub, and her irregular shuffling gallop when, on scenting a seal, she must have changed her sluggish gait to the quick trot of a polar under full headway.

During the rest of the month the temperature continued to moderate. On the 27th, with a reading of 32°.5, fur-dresses became uncomfortable; the fall of snow did not exceed five inches, and the walrus and seal were found to be more plentiful in open water. While

watching for them, Hall himself was at one time exposed to the most imminent danger of his life by the opening of the floes. He records in his notes his thanks for preservation and his purpose to exercise greater caution.

For a number of reasons now forced upon him, he unwillingly came to the conclusion that his anticipations of disappointment in obtaining dogs and provisions for a spring journey toward King William's Land, would be more than confirmed. The season advancing while he was still so far from Repulse Bay, it would be as much as he could accomplish while making his voyage there, to stand by his boat and stores, his personal protection of which had become clearly an absolute necessity. The dispersion of the Innuits seemed to prove that perhaps little reliance could be placed on their help. He therefore began to lay his plans for an early move with his boat to the bay; yet, under the delays even for this, which were plainly before him, he contemplated a useful work of which he thus speaks:

> I have been thinking that perhaps I can do no better than to survey and chart the west coast line of the Welcome, commencing a few miles to the southward of this point, and thence up to Wager Bay; and then do the same with the Bay. I regret I have not a light theodolite, a very essential instrument for such work as surveying in these parts, when the compass is of no use whatever. At present I see no other way than to do it all with sextant, determining latitudes of the more important points astronomically, and taking solar bearings from one point to another; the intermediate indentations of coast being examined and charted as best I can. Although this work and very much more around Hudson's Bay needs to be done, and done well, if at all, yet I have not the heart to do it, for it is old ground, an ancient discovery without survey. Give me the means and I will not only discover the North Pole, but survey all the land I might find between Kane's farthest and it, and have my whole soul in the *work*.

His health at this time was far from being strong. He had suffered much from the very severe exposures to which he had been subjected, and particularly on the day when he had been in imminent danger of

his life while out on the ice-floes walrusing with Joe. But his chief ailment was a sharp and severe pain in his left breast, arising from the strained and unnatural position which he was obliged to take when writing his journals. "Of all the work ever accomplished in the northern regions, nothing had done him the one hundredth part of the injury which journalizing did."

So far as he found it possible under the circumstances to form any matured plan for his advance, he sketched a rough outline including the points:—that on arriving at Repulse Bay he must establish his headquarters and go in with his company of Innuits for reindeer-hunting to lay up a stock of provision for the following winter; that during the winter (1865–'66) he would make a sledge journey to Boothia Felix and King William's Land, and be on hand for summer work in the latter of these; that he would spend the winter of 1866–'67 with the Innuits of Boothia Felix, many of whom really winter near King William's Land: and having completed, as he hoped, all his work, by the summer of 1867 he would be ready for home.

When writing of this to Chapel, of the Monticello, he said:

> Remember that I purpose to go to that part of the world where one hundred and thirty choicely picked men—the very flower of the English Navy—all perished, save three, in one short month or so by *cold* and *starvation*. I cannot accomplish what I have undertaken except by the greatest caution. I and my companions may never return, though I do not entertain the thought that such an event is probable. There is more to be feared that we may fall by the treachery of the evil-disposed portion of the natives than by cold and starvation; but as I shall make deposits of records at Repulse Bay and at other places, and shall describe how they can be found, if we do perish, the world can still learn what I have accomplished.

The necessity for his delay after he should reach Repulse Bay, arose from the fact that it would be entirely too late on his arrival

there for any sledge journey. It will be found that his anticipations of any treachery on the part of his companions were far from being realized. He was able to company with them safely through the long delays of five years.

The movements of the different parties of Innuits toward the Wager were now dictated by their necessity for a change of residence to obtain the supplies which the opening season promised from the capture of salmon and the seal. These movements, as would be expected, were fitful and the journeys generally slow. Hall's entire dependence on them is sufficiently obvious; and it is satisfactory to find in his journals that any temporary break in the exercise of that mutual good feeling which was to him a necessity, was soon healed. His friends, the captains at the islands, had rendered him good assistance toward this, by exhorting *Ou-e-la* on his protracted visit to give on his return better counsels to his people. This he seems to have faithfully done.

He surprised Hall on the 1st day of the month by coming in upon him in his *igloo* with his wife and a sled which he had heavily loaded up from a deposit twenty miles down the Welcome. The rough working of this sled over the ice had made him perspire very freely, but he at once called for repeated draughts of water, on Hall's remonstrating against which, Ebierbing said that quart after quart never hurt an Eskimo when perspiring. *Ou-e-la* brought with much news from Captain Chapel, the luxuries of some ship-bread and half a dozen mince-pies; he also brought a large-sized *neit-yuk*, seal (*Phoca hispida*). Room in the *igloos* was readily made for the newcomers, whose first meal with their friends was again ruled by Innuit custom. *Ou-e-la* had eaten venison in the morning; he could not now

eat seal; his friends had eaten seal, and must be content with more of the same for supper. The next morning's comfort, however, was improved by a sociable breakfast by all hands on boiled salmon. Ebierbing brought in during the day two Arctic 9-pound hares, which Hall weighed by balancing them with bullets the weight of which he knew to be fifty-two to the pound. A mutual instruction class seems to have been then unintentionally formed among the party housed by the gale. *Ou-e-la* spent much time in confirming what had been previously more than once asserted by his people, that trees were certainly to be seen growing on Shar-too (Prince of Wales Island), and that between Wager River and Boothia a species of soap-stone used in making the native lamps and kettles (the *Lapis ollaris*) is to be found in abundance. Hall, on his side, gained their attention while correcting their crude ideas of the motions of the sun, moon, and stars; like all other Innuits, they believed that these moved daily around the earth.

On the 4th, the lowest reading of the thermometer was 57° below freezing-point. A southeast gale, which prevailed from the 5th to the 8th, is noted in connection with expressions of sympathy for Franklin's men in the terrible sufferings which they must have endured if in their weak state overtaken by such a storm on their fated way to Montreal Island. The thermometer during this gale showed a mean temperature of — 18° and a minimum of — 30°. For ten hours, however, two of the natives remained out unflinchingly to bring in reindeer-carcasses at nightfall.

Hall's *igloo* was the headquarters for fresh meat. They were all still living on an *ook-gook* which Ebierbing shot on the 16th of the month previous; and it is again to be noted that he was the chief

hunter for the village. He was the only Innuit who had as yet shot a seal in the open water But Hall knew that he had been accustomed to this for years, and felt satisfied that if Joe kept his health, there need be no fear but that he would secure enough provision to keep eight or ten hearty men in good working condition.

The full opportunities which now offered themselves for observing the tides in the Welcome, led to the conclusion that their true direction differs from that spoken of by N. West Fox, who explored the strait in 1631, and by other earlier as well as later explorers. The flood-tide was found to set in from the south, while the ebb comes from the north. The Eskimos say that below the Wager, *oo-lee-po-ke* (flood-tide) comes from the south, and *tin-ne-po-ke* (ebb-tide) comes from the north; while above the river the reverse is found.

The tides in Hudson's Bay, Hall remembered, were admitted to be inconsistent with general rules. He had read that—

> When it was discovered that at Resolution Island, lying at its entrance, the tide was full 30 feet at full and change of moon; less and less as advance is made westward; only 6 feet at Cary Swan's Nest, on the south of Southampton Island; but thence to the west side of Hudson Strait higher and higher, and the further an advance is made north, still increasing:—it was concluded that there must be some strait or passage connecting the west side of the bay to a western ocean or the South Sea.

The move toward the Wager and thence to Repulse Bay was now begun. On the 10th, *Ou-e-la* and his family, with some of Hall's stores, started with a large team toward the Wager River, followed by every remaining one of the company except Ebierbing and Too-koo-li-too, who still domiciled with Hall. His *igloo*, which up to this time had been so often crowded by men, women, and children, and dogs, was now left free, giving him the enjoyment of some repose for writing.

Ar-mou's sled had on it his whale-boat presented by the captains of the ships, which was 28 feet in length, with 6 feet beam, and 2½ feet depth. Besides this boat, with its oars and rigging, the sled held household utensils and provision; yet the team was made up of but six dogs. *Nu-ker-zhoo* had but two dogs and a puppy for a load usually requiring a team of eight; but the journey before them promised to be over comparatively smooth and hard snow. Very soon *Ar-mou* stopped his team and gave each of his dogs a most unmerciful thrashing "just to warm them up and prepare them for their hard work."

Four days after they left him, and while Hall and Ebierbing were in their *igloo* finishing their own packing, they heard the cry of dogs, and soon after, the sound of their pattering feet and the music of the sleds gliding over the crisp snow. Unharnessed dogs then came bounding into the *igloo*, seizing whatever had the appearance of meat or skin; hunger had made them fiends, and blows from a club or hatchet that would have killed an ordinary dog were necessary to save what remained of the provender. Their masters, *Ou-e-la* and *Ar-too-a*, next appeared, and it was evident that *Ou-e-la* had brought his companions to a better mind toward Hall, for they joined cordially in loading up the stores and assisting him to start.

In the afternoon, after journeying over compact snow 14½ miles in a direction north-northwest from the last encampment, Hall came to the new settlement already made by the advanced parties on a lakelet, and was warmly received. By meridian observation of the sun, the latitude of this "eighth encampment" was found to be 64° 55′ 19″ N. On the lake were seen a number of snow-walls, measuring each nearly two-thirds of a circle of from four to five feet in diameter

and the same in height. The concave sides of these facing south were sheltering the women and children while fishing for salmon through the openings which the men had cut.

Ar-too-a's wife, being seized with a fit, was surrounded by her friends who were about giving her up, when Hall succeeded in restoring her by the use of medicine, completing the cure on her second attack. Ebierbing and Too-koo-li-too suffered from severe colds which they took during the warm days, on one of which the temperature was as high as 33°.5. The freedom from colds among the natives was generally so marked that they attributed what discomfort they had to their having caught colds from the white men on their visit to the ships. On the 24th, Hall's party moved to his ninth *igloo*, and on the next day the boats were sent forward to gain a position near Wager River. The half-starved dogs were so ferocious as to be almost unmanageable, but their loads were borne forward by the help of a sail, rigged lug-fashion and spread to the southerly winds. They moved rapidly along. On the journey, Too-koo-li-too caught "a whale of a salmon" weighing more than 15 pounds. It was 37½ inches long and 20 inches in circumference, a "*Jonah*" 13 inches long being found within it.

Traveling again over the hard snow which covered the long narrow lakelets and the small space of land between them, the party made excellent time through this highway between the rocks, which had been long known and frequented by the natives. Five heavily-loaded sleds pushed forward, men, women, and children being harnessed to each to assist the dogs, and on the 29th the party went into huts on the ice of the Wager, lat. 65° 19′ N, long. 88° 40′ W. The severely cold, cloudy, and hazy weather had produced snow-blindness, with which even Ebierbing had become affected.

Chapter VI.

FROM THE WAGER TO FORT HOPE.

MAY TO SEPTEMBER, 1865.

CHAPTER VI.

THE THIRTEENTH ENCAMPMENT MADE UPON THE WAGER RIVER—A SUCCESSFUL SEALING SEASON—HALL'S OWN PRIZE—REJOICINGS AT THE FIRST SUCCESS OF A YOUNG INNUIT—CUSTOMS AT THE BIRTH OF AN INFANT—MOVING FROM KONG-MONGS INTO TU-PIKS—APPEARANCE OF THE DESERTED VILLAGE—AURORA—JOURNEY TO REPULSE BAY—REFRACTION—ENCAMPMENT ON OOG-LA-RIO-YOUR ISLAND—OU-E-LA'S DEXTERITY IN HUNTING—GAME SECURED—THE MAKING OF OOK-GOOK LINES—CLEARING OUT OF THE ICE—APPEARANCE OF THE WHALERS IN THE WELCOME—REFRACTION—STORM—TREATMENT OF THE DOGS—THE TIDES—DEATH OF SHOO-SHE-ARK-NOOK—MOURNING CUSTOMS—RENEWED APPEARANCE OF WHALERS IN REPULSE BAY—CAPTURE OF A WHALE BY THE CREWS OF HALL'S BOATS—ENCAMPMENT NEAR FORT HOPE OF DR. RAE—HALL'S NOTES OF THE ROCKS, STONES, AND SAND FOUND ON THE ICE COMPARED WITH PARRY'S OBSERVATIONS.

At the end of nine weary months Hall had now but reached the place on which he had expected to make his first landing. His encampment was next made on the ice out in the Wager. Its astronomical position when recorded, was followed by a note of the accurate judgment shown at the time by *Ou-e-la* and *Ar-too-a* "in keeping in their mind's eye so approximately the direction of distant points." When separately directing the compass at Hall's request toward *Noo-wook*, sixty-two miles distant, they pointed it in lines differing but one degree; and on Hall's applying the correction for declination, he found the bearing nearly agreeing with his own result.

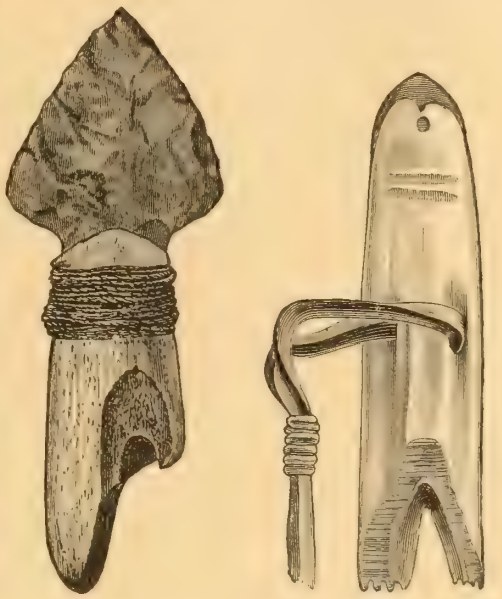
On the 3d of the month the party witnessed a fine auroral display in the western sky; the color was nearly a medium between

silver and cream; the rays active and changeable; the sun was about one degree above the Wager's ice horizon, making the fleecy clouds brightly aglow. The hour was 8.20 p. m. The temperature for a number of days remained low, the readings being 37° and even 42° below freezing-point.

Sealing, however, soon began to prove successful. *Nu-ker-zhoo*, with one stroke, harpooned a mother that had on her back a pup 3 feet 3 inches in length, and on which the hair was beginning to take the place of its white woolly coat. Shortly after this, five other seals were taken. Under the guidance of the Innuits, and with the help of his own capital seal-dog *Ou-e-la*, on the 5th, Hall made his own first but valued prize, a *neit-yuk*, weighing 200 pounds. Finding himself among the busy sealers on the ice, he soon heard *Nu-ker-zhoo* calling him to the seal-hole at which he was; and seating himself on a snow-block over the unseen hole, and there listening intently and scarcely moving a limb for one full hour, at last he heard a softly-breathing noise beneath the snow. Raising himself then cautiously to his feet, which rested on the furred *took-too* skin, and with his right hand poising his *oo-nar* over the spot that *Nu-ker-zhoo* had imprinted in the snow over the seal-hole, with his full force he drove the spear vertically down, and instantly found that the blow was a telling one. The coil of the seal-line held in his left hand, began at once to run out; in fact, the whole of it was at first jerked out of his hand. But "quick as a flash," he says:

> I seized it again, or I would have lost my prize, as well as the harpoon and line. The sealers far and near saw that I was fast to a seal, and although I called to *Nu-ker-zhoo*, "*kiete! kiete!*"—come here! come here!—there was no necessity for it, for before I uttered a word he and all the others were making their way to me. Had I caught a whale, there could not have been more surprised and

happy souls than were these Innuits on finding I was really fast to a seal. Laughter, hilarity, joyous ringing voices abounded. Almost the last Innuit who arrived to congratulate me was my good friend *Ou-e-la*, accompanied by his dog, dragging a seal which he had just captured. Last of all came the young ladies, *Tuk-too* and *Now-yer*, with dogs and sledge, and a seal which *Ar-mou* had taken a little while before. All this time nobody had seen my seal, for it was flipping away down in salt water beneath the snow and ice of Wager River, still fast to one end of my line while I held on to the other. *Nu-ker-zhoo*, with his *pelong* (long knife), then cut away the snow, two feet in depth covering the seal-hole, and removing still more with my spear, he chiseled away the ice-lining just above the hole. Soon the seal came up to breathe, and then the death-blow was given to it by a thrust of the spindle of the spear directly into the thin skull. The prize was drawn forth—a larger seal than either *Ou-e-la's* or *Ar-mou's*. Again the air resounded with shouts and joyous laughter.



INNUIT HARPOON-HEADS.

It was the first case among them of a white man's success in harpooning.

The party of fourteen immediately cut out the liver and a little of the blubber of each seal for their lunch, and carefully sewed up the slits, that none of the blood, so valued for soup, should be lost. They then buried the animals in the snow, to prevent their skins from blistering in the sun's rays, and still further prosecuted the hunt, dragging to their *kom-mongs* in the evening seven seals, the average weight of which was 200 pounds each. From that date, the living was on seal-meat exclusively for a number of days. It was a fair exchange for

the *koo-mucks* (worms picked from the reindeer-carcasses), the soup from which the Innuits had been enjoying. They eat these even when their wings begin to form.

For Hall's future success in sealing, *Ou-e-la* made him a *kipe-kut-ta*, a little rod of whalebone, about the size of a common knitting-needle, about 30 inches long, and pointed with a small sewing-needle, the other end having a thin string, 2 feet in length, to which is attached a peg. This was for a seal-signal, particularly to be used in windy weather when it is difficult to hear the breathing of the seal, or when the snow-covering of its hole is very deep. When the animal approaches its hole to blow or breathe, it will strike its head or neck against the needle-point and lift the slender and light *kipe-kut-ta*, slackening the string; this is the signal for the huntsman to deal his blow. This needle is used only when really necessary; for if the seal strike its nose or any tender part of its face against the point, it may become alarmed; or if the instrument should happen to chafe against the snow so as to produce a noise, the wary animal will at once become suspicious and retreat. Sometimes the sealer has an advantage in its use when the seal, almost exhausted, is forced to gain access to the air even at the expense of its fears. Hall afterward used his signal-rod twice, but without any good fortune.

Before the middle of the month success in the hunt had so increased that ten seals were caught on a single day. At this time, as fast as brought in, they were devoured, save the *ook-sook* (blubber). "It is astonishing, even to me, to see the vast amount of meat that a company of Innuits can consume. They can live on little if little is all they have; they do live on a great deal if abundance is obtained."

Hall relished venison even when much tainted, though bread and

coffee were welcome adjuncts. He thought young seal-flippers, hair and all except the finger-nails, tender and nice as a spring-chicken; but of his experience, generally, of the effects of old seal and walrus meat, he says that for days after eating it, his tongue tasted badly, as though it were much furred, and that seal-meat alone or seal-meat with blubber is terrible on a white man—excessively constipating. On the Innuits the effect is less serious. Cooked seal-blood when eaten becomes equivalent to the "*tappen*" of the she polar bear, which it produces by eating moss preceding hibernation; indeed, it amounts almost to an immovable mechanical obstruction to what nature designed should have free way. Walrus-meat affects the system about the same way. Too-koo-li-too believed that the reason the Innuits are so dark-colored is because of their eating so much raw seal-meat and blood; and that the *Kinna-patoos*, whose country is in the vicinity of Chesterfield Inlet, must be a lighter-skinned people, as they never eat raw seal-meat. Hall remarks, in connection with this, that Innuit babies when quite young are nearly white.

The first exploit in seal-catching by a young native is thus detailed:

The mother of the boy *Ivee-chuck* came to the entrance of our *kom-mong*, her whole frame shaking with joy, while she told the news she had just heard, that her son had harpooned and killed a seal in its hole. Then she went from *kom-mong* to *kom-mong*, notifying the women that her son was on his way back with the prize, and started off with all speed to meet him. I watched every movement closely. As she met him, the dogs were stopped and the joyous mother embraced her darling successful boy, then stooped and patted the seal as though it were a living pet. She next disengaged the dogs' harness from the draught-line, and started toward her *kom-mong*, dragging the seal after her, when the women, with their *oodloos*, hastened to meet her. It was a woman's race. Old *Ook-bar-loo* hobbled along as fast as she could, but was left far behind, and, therefore, she

kept crying out in her native vernacular for her competitors not to go too fast. Though this old petulant creature's commands are usually obeyed, they were not regarded this time, for the race proved a hot one, though the surroundings were nothing but heavy ice, hard snow, and very cold air. As fast as the women came up to the seal which the mother was dragging, they fell upon it and slashed away right and left with their *ood-loos*, till the poor defunct was completely haggled into as many pieces as there were hagglers.* Old *Ook-bar-loo*, having arrived late, only got a small portion of the seal—the liver, heart, and lights. Too-koo-li-too in the contest succeeded in getting a hind quarter, consisting of meat, blubber, skin, and flipper. Some women got more and others less, though they left what their customs required—the head, neck, fore flippers, and some of the blubber and meat,—for embellishing the *igloo* where the youthful victor resides. What remained was dragged to the *igloo* by the joyous mother, and thus ended the public celebration.

The first seal caught in open water and the first one taken by watching over an ice-hole are occasions for like demonstrations of joy, in which all usually share, except those who have been afflicted by death in their families during the year.

The tracks of the reindeer were now frequently seen. Ebierbing failed in securing some bucks through his snow-blindness; in a few days, however, he was well, and, with his usual skill, caught two seals, of which he gave pieces to the different families and piled up the rest on the floor of Hall's *kom-mong*, making it look like a slaughter-house.

On the 12th, one of *Ar-mou's* wives, who had given birth to a child on the 5th, was now permitted by the Innuit customs to come again from her separate *igloo* into the family hut; not, however, by the common passage-way, but, at the decision of Old Mother *Ook-bar-*

* Hall does not give the dimensions of the seals captured. It may be of interest to note the measurements given by Captain Lyon in his narrative of a voyage to the same region. The number of seals daily seen by his officers was large, and their boldness made them an easy prey. Four were killed one evening, two of which (the *Phoca Barbata*, or bearded seal,) weighed from eight to nine hundredweight. The length of one from nose to insertion of the tail was 8 feet; the length of the fore flipper, 10 inches; of hind flipper, 1 foot 3½ inches; the circumference of the belly was 7 feet; the circumference of the head behind the ears, 2 feet 5 inches; the circumference of the nose, 1 foot 4 inches.

loo, by an opening cut for the purpose through the snow-wall. She was now to keep a little skin-bag hung up near her into which she must put a little of her food at each meal, having first put it up to her mouth. This is called laying up food for the infant, although none is given to it. For a year from the birth, the mother must eat neither anything raw nor that which has been wounded in the heart. Hall notes that a birth occurring on a journey occasions no delay; the Innuits of this locality differing as to this in a marked degree from those further east. The mother is almost as well as ever an hour after the birth. The new-comer nestles at its birth in its *took-too* bed (its mother's hood), as naked as when born, and it usually remains without clothing for at least two years.

It now became very desirable to go down the coast 32 miles southward and bring up the four whale-boats which belonged to Hall and three of the natives, and the stores of the expedition with the medicine-chest and other deposits, in order that an advance might soon be made toward Repulse Ray. A well-known disease, which threatened to sweep off very many of their dogs, having already destroyed several, this journey became the more urgent. Accompanied by Ebierbing and five others, with three sledges and twenty dogs, on the 15th, Hall crossed the Wager, and, after tracking a bear, ascended the high land to examine the condition of the bay. Two miles down, a heavy black cloud hanging over it extended from shore to shore, showing much ice drifting out with the swift ebb-tide.

The journey occupied the traveling hours from seven in the morning of the 13th to 10 a. m. of the following day, some time having been given, however, to the hunt of *took-too*. It had become so light at midnight that no stars were visible. Hall feasted in the *igloo* on

the head and brains of a deer; his companions delighted themselves with the worms found under the skin. A severe gale surprising the party after they had lashed their boats on the sleds to return, they halted, and Hall cooked a large quantity of deer-meat and treated the company to so much hot punch that they began to utter confused sentences, and retired at 8 p. m.

On the 16th, *Ou-e-la* with much tact pushed forward the heavily-loaded sleds, and, although he lost several dogs, at last brought up the boats on the ice of the Wager, launched them for a sail of two hours on its open water, and then again sledded them over to their latest encampment, reaching it at midnight of the 18th. On their route they had visited Ar-lig-ouk-lig, a place which has the appearance, on approaching it from the north or west, of an inverted whale-boat. A "*tablet*" was found here, 50 feet in height and 25 feet in width. The place is considered sacred by the Innuits, who made at this time a deposit there, with an address and a solemn farewell. In a crevice 5½ feet from the ice a lead ball was now placed, marked "Hall, 1865." On the crest of a hill, some distance further on, were found six circles of stones which *Ou-e-la* said were the remains of the *tu-piks* of Innuits long since dead; and that here they made their stopping-place when passing from Noo-wook to Oo-koo-ish-ee-lik.

The rapid advance of the warm season again required a change of residence. The *kom-mongs*, or half-snow houses, were untenantable by the snow-drippings. When broken down, their remains, mixed up with masses of blubber, broken and uncouth native utensils, and filth, presented a strong contrast to the beautiful arched and solid domes as described by Hall in the previous autumn.*

*Captain Lyon, in his journal kept during Parry's second voyage, 1821–'23, says of a like scene: "I had several times in my rambles through the world seen huts which I imagined could

Nu-ker-zhoo, on leaving his *igloo*, took out, according to custom, all his skulls and bones to the ice some distance off. Ebierbing was snow-blind. He had come in from his deer-hunt looking like a pillar of snow and his dogs like small snow-drifts. He had found *Ar-mow's* wife wandering about in the snow, for she had lost the way to her own *tu-pik*, and could not *as yet* enter any other. Despite of his woolen mittens, Hall's own fingers now tingled more with cold than they had done during the whole winter, and the change brought to him a sickness; but, like a number of attacks experienced since his first landing, this was but temporary. He was again cheered by letters from Captain Chapel, brought by two natives who had left the ships on the 10th of April.

The first five days in June were in marked contrast with the end of May. The glowing sunsets, which mirrored themselves in the water of the Wager, closed upon hours favorable for observations and for hunting. Hall's boat, the Sylvia, with its stores, was brought across from the south side of the river. By ascertaining with his sextant that the ice-foot on the other side, 20 feet in height, subtended an angle of 5′, he determined the breadth of the Wager to be two and a half miles.

The *tu-piks* had been again set up on an island called Noo-oot-lik, which forms one of the chain lying close along shore of the river. On this many circles and stone monuments were found. On the 5th, tak-

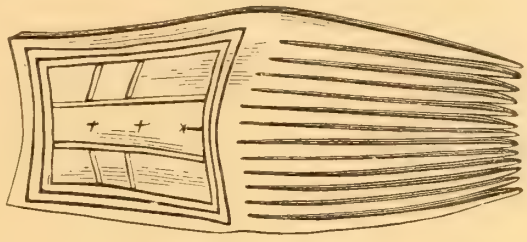
not be equaled in wretchedness of appearance; but I was yet to learn that of all miserable places on earth a snow village recently deserted is the most gloomy. The huts, when viewed from without, glisten beneath the rays of a spring sun with a brilliancy which dazzles and pains the eye; but the contrast within is therefore the more striking. The roofs melted into icicles and coated with smoke; arches broken and falling from decay; the snow-seats, floors, and partitions covered with every kind of filth and rubbish—bones, broken utensils, and scraps of skins—form altogether the most deplorable picture, while the general air of misery is tenfold augmented by the strong glare of light which shoots through the hole once occupied by a window."

ing down the tents, transferring everything to the boats, and rigidly guarding the provisions from the voracious dogs, the company moved forward under sail, passing through a narrow channel of one and a half miles in width, and for some hours resting on a bight, found to be entirely free from ice. The opposite southern shore was hugged by an ice-stream sweeping up and down with the tide. The next resting-place was on an old ice-floe about one mile from land, full of fissures and large bergy pieces, on attempting to round which both Hall's and *Ar-mou's* boats struck hard, but without serious injury. Hall's own boat, the Sylvia, had been twice nearly destroyed—once by his pilot and wife having both fallen asleep while he himself was napping. *Ar-mou's* equipment was enlivened by the birth of a litter of puppies. While crossing a break in the floe they saw a remarkable stone, called by the Innuits *Ye-ar-yu-lik*, 30 feet in perpendicular height, and standing alone about a mile from the coast. *Ou-e-la* said it could not be ascended.

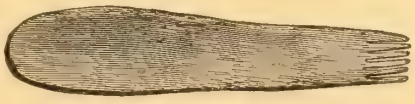
On the 8th, a gale, with drifting snow, forced them to seek the shelter of a floe; but as it was soon broken up, a more secure refuge was hastily sought under the lee of a small island. To Hall's dismay, he found that his Ward chronometer, which he had sacredly guarded from all jars, had been unwound. Egger's he had wound up. Ward was "dead."

On the 10th, pulling at the oars for a half hour and then getting under sail, they made four knots an hour, and at 2 p. m. saw the bold and snow-capped mountains of the north side of Sedla (Southampton Island.) *Nu-ker-zhoo's* whale-boat, loaded with men, women, children, dogs, and all manner of truck—his sled across the bow—moved lazily along under mainsail and jib. While *Shoo-she-ark-nook's* son was steer-

ing, his father was searching the boy's head for *koo-miks* for his supper. Upon the floe, *Ar-goo-moo-too-lik*, who, with his family, had come up by land, was discovered not far off, urging forward his dogs. When the tide turned, Hall's party had hard work at the oars, but at midnight of the 10th they made their first landing on the ice of Repulse Bay. A stream of heavy ice threatened to crush the boat, but by great exertions it was hauled up on the floe, which almost immediately broke up. After repeated like severe experiences, the twenty-first encampment was made on the shores of the bay at midnight of the 13th, in lat. 66° 15′ N., long. 85° 16′ W. Hall thought there was a history in this one day. But this bay, from which he was at some future time to set out for King William's Land, had now been reached. Disheartening it was that the season of that year was too far advanced for sledging, and that for the rest of the month he was to make here his home.



INNUIT IVORY COMB.



INNUIT BONE COMB.

On the 19th he crossed Hurd's channel from a landing on the island near Cape Frigid. *Ou-e-la* spoke of a party of Iwillik Innuits, including *Ar-too-a*, *Shoo-she-ark-nook*, and *See-gar* (*Ou-e-la's* father), who, while out walrusing in these waters, were carried off on a broken floe and landed on Sedla. By watching the first opportunity they got upon another floe, on which they were carried by the tide to Iwillik arriving there in a perishing condition, after eating all their dogs and suffering from extreme cold.

While Hall was on Southampton Island he took many observations for the determination of the coast line; he returned with his party to his twenty-first encampment at 8 p. m. of the 22d. The latter part of the month gave him the opportunity of writing up the journals which he designed to send to the United States by the first whalers that should appear in the bay. He took his share in the frequent hunts opened up by the season.

Game had steadily increased from the beginning of the month. On their sail from the Wager it had been constantly in sight, giving them a number of deer, fourteen partridges, and an *ook-gook* shot from *Ou-e-la's* boat; in the middle of the month, when *Ar-too-a*, *See-gar*, and *Ar-goo-moo-too-lik*, with their three sledges, joined the sailing party on the floe, they reported eleven deer killed on their route; and during the last two weeks of the month, the whole party were in the highest spirits from the very large number of deer, seals, and rabbits that were taken. The young deer were found to have their new horns quite large. The rabbits had now already heralded the approach of summer by changing their white fur for coats of a light brown or slaty hue. As early as the 16th, the first flowers, (the purple saxifrages,) had been seen growing abundantly in patches on the plains.

Ou-e-la's hunting was again successful by his great skill in enticing and securing his prizes. Approaching the deer, he worked himself along so stealthily from rock to rock as to escape the animal's closest watch, and, although the crows were noisily affrighting the herd, he quickly killed several. Skinning one in seven minutes, he left the meat for one of his wives to bring in; and approaching a fawn, he artfully uttered sounds so successfully imitating its doe, that it ran toward him, giving Hall the opportunity of shooting it and of receiving con-

86°00'
Terr
Low Land
Haviland Bay
Ships Hbr Ids.
L S E B A Y
each Point
20 Fms
Cap
ROWE'S WELCOME
86°00

gratulations on his return to the *tupiks*. With the assistance of Ebierbing's like tact, Hall wounded a deer, which he endeavored to drive or lead in toward his tent; but when the strap of the marine glass was fastened around its head, the untamed animal reared, kicked, danced, butted, and cut such wild capers that, within a quarter of a mile of home, they were compelled to knock it on the head. Ebierbing, on a visit with some others to Oog-la-ri-your Island, caught twenty-six seals on the same day. *Ou-e-la* brought in, besides three deer, several pintail ducks, with their eggs which were of a greenish cast, but smaller than those of the eider;—of the size of hen-eggs only.

On the afternoon of the 26th, from the top of a little hill, Hall observed a remarkable instance of refraction. The mountains of Southampton Island, which are of no great height and their slopes gentle, appeared to be very high and precipitous; an irregular chain was converted into a huge plateau. A descent of even 5 feet from his position made the mountains appear nearly natural; one of 10 feet entirely so.

In his excursions he met with two specimens only of iron ore resting on primitive rock.

On the 1st day of July he moved a short distance to the Island of Oog-la-ri-your, where the larger number of his Innuit friends had already encamped for more conveniently hunting the seal. On removing their *tupiks*, the blubber which had been saved was stored away in seal-skin "*drugs*," and deposited in a cache for winter use. When making these bags they took off the skin from the animal unbroken except by a small opening about the head, and when this cut was made, a knife was thrust in longitudinally and used freely until the blubber was completely separated from the skin; the fore flipper was jointed.

BOAT JOURNEYS IN 1865

WINTER QUARTERS 1865-66

87°00'
86°00'
85°00'
66°30'
66°00'

Winter Quarters
Ft Hope
Beacon Hill
26 & 29 Encl Sept 4 — Feb 8 1866
25 Encl Sept 3
Winter Quarters
Nowyarn
27 Encl Dec 5
28 Encl Jan 24 1865
24 Encl Aug 25
21 Encl Aug 7
Lowland
Termination Mt
Highland
Haviland Bay
Gibson Cove
Ships Hbr Ids
REPULSE BAY
Ooglariyouit
22 Encl July 1
21 Encl June 13
June 21
Beach Point
20 Encl
To Ellis, Cape Frigid
FROZEN STRAIT
ROWE'S WELCOME
Cape Frigid
June 19
To Repulse Bay
To Eastern Shore
SOUTHAMPTON I.
(SEDLA)
Sun Mark Mt
19 Encl

Drawn by A Lindenkohl

The seal was then worked out by the hole made at the head. If any small rent had been accidentally made, it was carefully sewed up before filling.

Just before their removal to Oog-la-ri-your, the natives had been suffering from very severe colds and pains in the chest; some had entirely lost their voices. Hall's medicines had been in frequent requisition, particularly for the relief of *Shoo-she-ark-nook*, now saved a second time from dying; but he believed that the improvement in their habits of living which he had induced the natives to make, had yet more to do with his success as a practitioner. His own health was again generally good. On the top of this island of Ooglariyour were the remains of the merry *Ivit-chuk* of Dr. Rae's party, and those of his wife. *Ou-e-la* told Hall that at one time very many Innuits lived there, but nearly all had died off.

He was detained at this twenty-second encampment, lat. 66° 19′, long. 85° 23′, throughout the whole month and until the 7th of August, by the severe illness of Too-koo-li-too from an attack of pneumonia. His notes on one of the days of her illness are: "Her symptoms are of the most serious character. She raises blood direct from her lungs. I feel that I have neglected to teach these children of the North their religious duties. Indeed, I feel that I need myself a teacher, and I am brought to know that I need a new heart. O, may I learn from the glorious Bible my duty, and by the help of God perform it." He much interested her by reading from the scripture history, especially that of Joseph, which story she in turn went over again to her husband. Hannah was still under the influence of superstition. It required a long and patient reasoning to convince her when sick that she could eat anything which *Ou-e-la* brought in, for the

natives had told her something was wrong at his birth. She was at times persuaded to drink the soup out of which Hall was accustomed to eat some of *Ou-e-la's took-too* meat.

The natives were industriously occupied in boat and sledge journeys, securing a large amount of game for their subsistence through the coming winter. By the close of the month, the footing up showed twelve seals, nine *ook-gooks*, thirty-seven deer, and a bear, besides four ducks and thirty-eight eggs. Hall's advice secured this increase, as well as the preservation of the well-dried meat in *drugs* of oil, in which it would keep sweet and fresh and already "buttered." He witnessed the mode of cutting up *ook-gook* and preparing from its skin the lines for securing the walrus, as well as for sledge tracings and lashings. From an *ook-gook* 9 feet in length the skin was cut into strips, and then stretched by block and tackle between the rocks. When sufficiently dried, the strips were made soft and pliable by rubbing and chewing. The land of civilization, he says, has nothing equaling these lines in strength and endurance of wear and tear. In the division made in cutting up the animal, a woman received an equal share with each of the men. The ice on the coast still remaining hummocky, it was very difficult to get a heavy *ook-gook* upon the island; yet, if the carcass was insufficiently covered with snow, ice, or deer-skins, the burning rays of the sun in a few moments destroyed the skin; or if the bear made its ready visit, it struck its huge claws through the tough coat, completely riddling it and tearing out the meat and blubber.

On the 22d, Hall visited the whaler Black Eagle, on board of which he had an opportunity of comparing and rating his chronometers. The first whaler of the season had been sighted on the 15th by

Ou-e-la, who had instantly harnessed up his dogs and hastened off to inform Hall. On *Nu-ker-zhoo's* coming in to confirm the report, he was directed to bring the longest pole he could find to the top of the island and fasten on it one of the American flags as a signal. At thirty minutes past midnight, with some little difficulty on account of the fog, the vessel was descried a little to the westward of Cape Frigid. The sight was sufficiently exciting and joyous to Hall to keep all sleep from him. He sent *Ou-e-la* to occupy his own *took-too* bed, while he went again and again to the crest of the island to watch the vessel and the movements of the ice; and he was very soon able to make out a second visitor traversing the Welcome from east to west, and then returning on the opposite tack. He hoped to find that these were the Antelope and the schooner Helen F., which had been wintering at Depot Island and Marble Island; for he remembered that Captain Chapel had advised him that these vessels, as soon as released from the ice, would cruise for whales in Repulse Bay. He was particularly anxious to discover some lead in the pack through which the Sylvia might be pulled by the strong arms of the Innuits to the ships, as he expected they would have on board a team of dogs for him, the captains having promised to bring all the dogs, which would be of no further use to them after the spring whaling was finished. They had been chiefly useful in sledging the blubber over the floe which lay between the ships and the open water.

From any attempt to go out to his visitors when first sighted he had been entirely held back by a storm breaking over the island. In describing this, he says:

> Yesterday morning, the sky was overcast and gloomy, the weather looking threatening as if a storm would soon be upon us; and, besides, at 10.30 a. m. of

the 14th, a thick fog, the first of the kind that I remember has occurred this season, commenced rising over the open water southward, and by 11 a. m. it was driven here by a southeast wind, enveloping the island in it. The succeeding morning, the fog was again over the open water and over the ice of Repulse Bay, the wind still southeast and south-southeast. From the morning of the 13th the barometer began to fall, standing then $30\frac{7}{10}$ inches; it gradually continued falling to Saturday morning, the 16th, from which time to evening it dropped down three-tenths of an inch. In connection with all this, I may mention what some might consider a trifle; nevertheless it shall have a place here. A small pool or reservoir of fresh water is close by the *tupik*, mostly on solid rock, but one side of it consists of moss and grass growing over cobblestones. Now, this pool rises and falls quite as regularly as the tide, though only about one-half as often. During the night the water of this reservoir falls, and from morning to evening it rises. The rise and fall seems to be quite uniform in height one day after another. Last night this water was nearly exhausted. Indeed, when I saw it just before the thunder-storm I was greatly surprised to find it so. This with other indications told unmistakably that something unusual was about to transpire in nature's elements. At 2.30 a. m. the first thunder-clap that I have *ever* heard in the northern regions occurred, the same being preceded by sharp lightning. A little while after, loud thunder pealed forth here, there, everywhere around Repulse Bay, especially away in the direction of Gibson's Cove, the extreme northwestern part of Repulse Bay, where were such piles of heavy black clouds—Heaven's electric battery—and such a continuous roar of thunder therefrom that I could not help thinking of the Almighty hand which holds the elements.

The storm ended at 4.20 a. m.

Ar-mou told Hall he had seen *ou-mer*, (lightning,) twice at Igloo-lik. His people never knew it to kill an Innuit. To-koo-li-too said in her country it struck *red* dogs; so they always killed such when puppies.

The old woman *E-vit-shung* gave a specimen of her treatment of her own dogs, which was amusing though severe. She found them one day asleep when tied up to the rocks, as was often necessary to prevent their cutting with their teeth into the oil-drugs and meat; a valuable drug had just been almost entirely ruined. This,

however, was not the cause of *E-vit-shung's* fearful pounding. When she arrived where some of the dogs were constantly kept fast to the rocks by long thongs, she stopped and commenced pelting one of the largest with stones. Every time she made a throw, she spoke to the dog as though he could comprehend Innuit speech. What she did say amounted simply to this:

"Here you are, old dog, and all the rest of you, sleeping and basking in the hot sun's rays all day, and at night wide awake, howling, barking, and crying, keeping me and all others about from getting any quiet sleep; and now, old fellow, I am giving you these stones for pay. As for the rest of you brutes, I will give you some another time." Her throws were of some account so far as this goes. She hit every time, and made the dog cry wofully. Each time she picked up a stone and held it in her hand, the dog watched her closely. Several false-throw motions were first made by the old woman, and when the dog ceased dodging, out would fly the huge stone from her hand, hitting him on the head, nose, or other parts of the body. My laughing so heartily was from the business-like manner in which the old lady addressed the dog during the severe castigation she was administering to it. If *E-vit-shung* can whip Innuit dogs a long time after they have done their evil work and make them understand just what their chastisement is for, then either she has a supernatural power, or the Innuit dogs are intelligent beings, moral agents, so to call them.

The old woman had been doing better service in the early part of the day by bringing word to Hall of the *blowing* of a whale, which she and her companion in the *tupik* had heard.

Hall says that the dogs are both a blessing and a curse;—almost constantly in mischief, opening seal-blubber drugs, howling all night, and ofttimes stealing into tents and abstracting meat, eating harness and walrus-lines. There is no end to the damage these brutes are all the time surreptitiously doing. But, on the other hand, in winter which includes about three-fourths of the year, they are of such value as draught animals, and as bear, musk-ox, and seal-dogs, that, with all their

depredations, on no consideration could the Innuits do without them. The severity with which they treat these friends has been more than once noted. *Ar-mou* and *Ou-e-la* beat several of them to death with an oar, and at one time with a hatchet. Their tenacity of life appears

ESKIMO DOG.
[From a photograph of Captain Chapel's.]

plainly in the midst of their sufferings when drawing such heavy loads while half famished, and in their endurance of unmerciful poundings. A case is cited, too, in which an animal pierced with several rifle-balls recovered his full strength, although sick when shot.

On the 6th of this month, scarcely any ice was to be seen in Middleton's Frozen Strait, the Welcome, or Repulse Bay. Hall thought

the term Frozen Strait a misnomer, being informed that it is never entirely closed. Refraction was much less marked than any which he had observed for many weeks past. The nights growing dark, he could no longer write up his notes in the *tupik* at midnight. Mosquitoes, which had first showed themselves July 10, were now filling the air; the number caught in the fresh paint which *Nu-ker-zhoo* had put upon his boat was beyond computation. The water-supply was renewed from a pool on the surface of an ice-floe near the island. The party who procured this could have secured a whale lying a little distance off, with his back out of the water, if their weapons had been at hand. Two other whales were seen by others the same day. *Ou-e-la*, who had made an encampment about five miles to the north, for better salmon fishing, was espied by *Ar-mou* coming down under sail, and on landing proceeded directly to Hall's *tupik* to inform him of the death of his much-beloved brother, *Shoo-she-ark-nook*. He received Hall's warmest sympathy, which he well knew he had reason to expect from the experience of a visit during a late serious accident in his family. His eldest son had fractured his skull by a fall upon the rocks among the hummocks, and although *Ou-e-la* had healed the fracture by applying the powerful suction of his mouth to bring the pieces together, he came to his old friend to tell him of the accident and its effect upon his wife in her peculiar situation. He now brought sad news.

"Strange customs have these Innuits. Neither *Ou-e-la* nor his brother *Ar-too-a* will now smoke, though they both are *great smokers*. They retain upon their heads the usual covering from morning till night. This covering at any other time, and especially when entering a *tupik*, is thrown back, leaving the head bare. To this head-covering

the skin and feathers of a *pee-tu-lark's* head were fastened, and a feather of the same water-fowl to each arm, just above the elbow. *Ou-e-la* and each of the male relatives of *Shoo-she-ark-nook* have a belt around the waist. Then, besides, they constantly wear mittens. On offering *Ou-e-la* some coffee, bread, and venison, he declined taking any, because he must have food cooked for himself separate from others during the term of mourning."

On the 7th, Hall with his party removed to the west side of Haviland Bay, making the passage in a rain-storm in just five hours—2½ to 3 knots per hour—on a northwest course across the mouth of the bay. The storm had begun from the southeast on the night previous to their setting out from the twenty-second encampment; but the weather clearing during the day, the party had embarked on four boats; the Sylvia and the Lady Franklin, with the boats of *Ou-e-la* and *Nu-ker-zhoo.* All were well laden with drugs of seal-blubber, sledges, dogs, men, women, and children, and the usual Innuit chattels. A breeze from the northeast favored them on a part of the voyage, but torrents of rain fell, and the greatest care was taken by all the party of Too-koo-li-too, who had been so long an invalid. The landing was made with ease at low tide, but to find a suitable place for the *tupiks* was difficult, as the rocks were everywhere dished, had pools in every excavation, and were sending down streams of water in every direction. The Innuits who had preceded Hall in removing from Oo-glari-your Island occupying the only available dry spot, he was obliged to take the most convenient one above high-water mark. At midnight the *tupiks* were completed, and the party comfortably housed at this new encampment, lat. 66° 31′ N., long. 85° 50′ W.

In the interval of a clear sky on their journey, two vessels had been again sighted at a distance to the southward; but indistinctly through the mist. Not even their masts would have been above the horizon, if refraction had not brought them up and their duplicates also; each vessel, from the water-line about it to the truck being matched by its complete image inverted, hulk to hulk, and all suspended in the clouds above the sea horizon. The day following, the two ships, the Black Eagle and the Ansel Gibbs, again appeared, beating up Repulse Bay. They anchored near an island to the southwest. Ebierbing and *Ou-e-la* had volunteered at a late hour of the night previous to go out to these ships in the offing. The wind freshening to a gale, *Ou-e-la*, more cautious than Ebierbing, soon returned; but the latter, after causing Hall much anxiety for many hours, still remained out of sight. As he had with him in the Sylvia *Nu-ker-zhoo*, *Oung-oo-choo*, and *Tuk-too*, their old mother, *E-vit-shung* who felt that all her earthly treasures were in danger, invested herself with the office of an *an-ge-ko;* and after having by the dawn of day satisfied herself by the answers of "Sidney," that although the Sylvia could not reach the ships, it would come back safe, she had relieved the minds of the other Innuits. In her communing with the spirit, she had been throwing her left hand continually around, giving a twisting motion to the thong which she had tied to a heavy stone, and "Sidney's" answers had come to her by his increasing or diminishing the weight of this stone. When the party returned, they reported that they had made a landing until the storm subsided, and having their fire-arms with them had made a successful *took-too* hunt.

Before their arrival several boats' crews put off from the ships to visit Hall, for whom they had been looking when passing Oo-gla-ri-

your Island. He records with much feeling the emotions which he experienced when the mate of the Black Eagle leaped ashore from the first boat and hailed him with the news, "The war is ended! but our President is assassinated." "This thunderbolt transfixed me to the spot; that the war was ended was what I had fondly anticipated I would learn; but who of my worthy countrymen would be prepared for such news—'Our President is assassinated.'" This with many other items of an interest fully to be appreciated by one so long shut out from the civilized world, was afterward placed in full before him in the files of New York and Boston papers which had been received by the whalers from the Daniel Webster at Marble Island.

The best feeling continued to prevail between Hall and the captains of the two whalers during their stay. On his visits to their ships, he informed them of the places in which a number of black whales had been seen by himself and by the Innuits, who had also seen many white whales (*Delphinus Albicans*), which were small. As to the color of these, the natives said that it was the young ones but two or three years old which retain the walrus or brown hue; the old ones (*kil-lee-lu-yers*) are white. He regretted that the other whalers did not come up into the bay to share in the partial success of the Ansel Gibbs and the Black Eagle. Being informed on the 20th that they did not design to winter here and thought it best not to risk any further detention, he spent a whole night on board one of the ships writing up his journals and dispatches to friends at home.

The letters of Captain Kilmer written at this time show his deep interest in the friend whom he was leaving, and gave practical proof of it by advising him of a deposit of provisions and stores made for him on shore. Hall notes *Ou-e-la's* honesty in keeping for him a num-

ber of small articles also entrusted to his care by the captain; he had stimulated the natives to secure for the ships as many deer as possible. The two vessels left the bay on the 21st. Their crews had secured a number of whales—eight on the 15th and 16th—the oil and bone of which Hall estimated to be worth $25,000.

The first opportunity now offered itself for the successful issue of one of the important elements in the original plan presented to the friends of the expedition in New York in 1862—the capture of whales which would repay in part the advances made for the outfit. After a number of cruises in the boats without being able to come quite within striking distance, on the 30th he was congratulated by all his Innuit friends for the success of the day. With his party of men and boys he left the *tupiks* at 4 a. m., to hunt a whale which had been for some time previous blowing around. The Sylvia and the Lady Franklin gave swift chase to the westward, but, after an hour's cruise, during which the whale made several risings, they were unable to get close enough, although they came almost upon it when rowing from an opposite direction around an islet A second whale was, however, almost immediately seen half a mile to the southwest, when the sails were quickly set and paddles and oars vigorously plied by the crews of both boats, "each of which ran down the leg of a V, the whale at its joining point." *Ou-e-la*, from the bow of the Lady Franklin which reached the goal a few seconds before the Sylvia, threw a whale's harpoon to which was attached a line of 20 fathoms, having at its end two *drugs* (floats). One of these was the forward part of an *ook-gook* skin, the covering of the head and flippers being as entire as when upon the living animal, with the

exception of the transverse seam; the other was the entire skin of a *neit-yuk.* Both were filled with air compressed by the stout lungs of an Innuit. Their double object was to indicate where the whale was and to tire it down. When *Ou-e-la's* iron struck into the back of the whale, it gave one slap of its flukes and went below the white seething waters, at first disappointing Hall, who thought it was now lost. He had furnished *Ou-e-la* on setting out with a full length of line, and was not acquainted with this Innuit use of floats.* But while the boats lay to, watching for a re-appearance, the *drugs* were seen far out in the bay flying over the waters, though with decreasing speed, and on the whale's again coming up to blow, it received a harpoon from *Nuker-zhoo* at the bow of the Sylvia, and *Ou-e-la's* iron drew. The whale again turned flukes for soundings, taking out with him half of the Sylvia's whale-line; it then immediately struck seaward, dragging the boat through the water with great speed. On its coming up and blowing, *Ou-e-la* lanced it from the Lady Franklin. It died within one hour from the first attack.

The anchor was dropped from the Sylvia, the corners of the whale's flukes were cut off, its mouth tied up, and the fins taken one into each boat. The towing of the animal to a floe was made with slow progress against head tide, but at 1 p. m. the prize was taken into a small cove near the *tupiks.* Hall had breakfasted on raw *muk-tuk* as soon as the whale was killed. The Innuits, though equally fond of the skin, could not join him, because they had already eaten *took-too;* in obe-

*Captain Ross, in his Narrative (1818), describes the native harpooning witnessed by him in the Greenland Seas: "The harpoon has a barb about 3 inches long, and a line attached to it of about 5 fathoms in length, the other end of which is fastened to a buoy of a seal's skin made into a bag and inflated. The blade is fixed on the end of a shaft in such a manner that it may be disengaged from the handle after it is fixed in the animal, and the shaft is then pulled back by a line tied to it for the purpose. When the animal is struck, he carries down with him the seal-skin buoy, which fatigues him. As he must come up to respire, he is followed up and killed by spears."

dience to a like superstitious idea, three days must elapse after the capture of the whale before any work could be done. On the day following, the carcass was cut up and cached amid scenes of feasting. Fifteen hundred pounds of the bone, designed by Hall for the benefit of his expedition, were securely deposited to be available on the return of the whalers to the bay in the following fall.

The amount of game secured during the month was very small. The Innuits thought that the deer had been frightened off by the smell of the trying out (boiling the oil from) the blubber on the whalers before they sailed.

A much greater amount of rain had fallen than Hall had experienced at any like period during his first expedition. The natives said that it was very unusual, accounting for it by the fact that during the winter there had been little snow, and but few fogs in the spring, and that these heavy and continuous showers were now making up the deficiency in moisture.

The general movement of the ice under the influence of the tides, winds, and currents, was from Frozen Strait and Hurd's Channel up Repulse Bay, and thence south and out through the Welcome. At times the bay itself was entirely filled with ice; sometimes the straits were blocked; occasionally both the bay and its entrances were free.

On the 4th of September, Hall made his twenty-sixth encampment, on the banks of North Pole River, near the Fort Hope of Dr. Rae. This was to be his winter quarters, in which he would prepare for his sledge journey next season to the west. From this point, also, he would make a survey of the bay, his observations of the coast line already made having satisfied him that an improvement of the charts

could be made for the whalers. Steadfast in the purpose to succeed in the several objects of his voyage, he had declined to accept offers from the whalers of a passage home. When he now set up his *tu-pik* the glories of a beautiful sunset were changing the Arctic hues of the landscape into tropical warm coloring, and filling the grayish, cool atmosphere with an unnatural brilliancy.

HALL'S NOTES ON FINDING ROCKS AND DÉBRIS ON THE ICE.

The journal of the 25th of July contains the following items of interest to the scientist:

This evening I have taken a walk among the grounded bergy pieces of ice that are near the west side of this island, and also on to the heavy masses of ice that are high and dry on the rocks on the northwest side. Spring-tides at this season of the year open a book that any Arctic traveler delights to read and study. The special part of this book of nature that I am at present reading, relates to stones, rocks, and sand found on the ice. The question among Arctic navigators has been, "How came these here?" Parry, when on his second voyage for the discovery of the Northwest Passage, met with much ice in the neighborhood of Southampton Island, on the surface of which he saw a surprising quantity of stone, sand, shells, and weed; and respecting these he makes the following remarks in his Narrative of said voyage, pages 32 and 33.

"While on this subject, I may offer a few remarks respecting the stone, sand, shells, and weed found upon the surface of all ice in this neighborhood. The quantity in which these substances have occurred was really surprising, and puzzled us extremely to account for the manner in which they found their way upon the floe. This circumstance has been generally explained by simply attributing it to the whole floe having been in immediate contact with the land, enabling the streams to wash, or the winds to blow these substances into the situation in which they are found, in the same manner as they are deposited on bergs found on the shore. But to those who have been eye-witnesses of the fact to the extent in which it here occurred, this mode of explaining it, however plausible at first sight, is by no means satisfactory; for masses of rock, not less than a hundred pounds in weight, are sometimes observed in the *middle* of a floe meas-

uring half a mile or more each way, and of which the whole surface is more or less covered with smaller stones, sand, and shells. To suppose the wind strong enough to blow these substances such a distance would be absurd; nor is the supposition of their having been washed there scarcely more probable, for as a floe of ice must float considerably above the surface of the sea, it is not easy to conceive how it can be overflowed, and much less how heavy stones can be carried half a mile along it. It has been suggested that the floe may be held down by its firm cementation to the shore while the water from the land above it rushes in a torrent along its upper surface. This, however, is contrary to experience, which shows that long before the streams on the land are sufficient to effect this, the ice next the shore is completely thawed and detached from the beach, and, therefore, at liberty to float in the natural way. The only explanation of this fact that I can suggest is, that, as it is generally found to be the case to the greatest extent upon the 'hummocky' floes, the substances may have been deposited upon each mass of ice when separate, and eventually brought into the middle of a large floe by the process detailed above. This explanation, however, goes but a little way toward clearing up the difficulty; for, besides the necessity of supposing, in this case, that each mass of ice has in its turn been brought into close contact with the shore, we have never seen an instance in any bay or harbor where ice so brought, even under the most favorable circumstances, has received any such deposit. In whatever manner it may be effected, it is certain that these substances act an essential part in the dissolution of the ice, as even the smallest stone or collection of sand may always be observed to have formed a pool of water around it in consequence of the radiation of heat from its surface."

It will be seen nearly at the commencement of these remarks of Parry, that he says: "The quantity in which these substances have occurred was really surprising, and puzzled us extremely to account for the manner in which they found their way upon the floes." The same subject has puzzled many a man, but I am confident the fact is as follows: The stones, sand, shells, and weeds are not deposited upon the surface of the ice; they simply are seen or appear there, as the ice evaporates or wastes away, which it eventually does more rapidly, of course, as warm weather comes on. These stones and other substances are picked up from the bottom of shallow waters by the ice resting awhile upon them and becoming cemented to them by the fingers of King Cold during low tide; and when the flood makes, up goes ice with its ponderous pickings. But, to begin at

the beginning, cold weather comes on; the waters become cold, and, growing colder as winter advances, ice forms; the tides all the time never forgetting their regular order of flood and ebb. As the spring-tides come on, during their ebb, in many shallow parts of Hudson's Bay, sheets of ice rest upon rocks, stones, shells, and weeds. These sheets of ice, as they lie, send down showers upon the already moist bottom, all of which conglaciate at once into a solid mass by the piercing, pinching cold of the north. Rocks and stones, shells and weed, sheets of ice, and what was trickling water become *one* solid body. The tide now floods and lifts the floe, having on its nether surface a ponderous load of earthy matter. Before another ebb, King Cold has succeeded in adding several inches of ice underneath the structure of rocks, stones, land, shells, and weeds, which are now completely enveloped in crystal. Ebb and flood succeed each other, and as often add a stone or other foreign matter, and then another stratum of ice to the floe or smaller pieces of ice that during certain intervals are afloat or aground.

I will now proceed to give some proof of all this I have stated. Three winters I have spent in the northern regions, two of them in the locality of Frobisher Bay. Many times have I seen in the springs succeeding these winters, stones, sand, shells, and weeds on the top of bay-ice, or such ice as had been formed on shallow waters. As warm weather advanced and the ice wasted away, more and more of these substances would appear. My attention was more particularly directed to this subject during my search on my voyage of 1860–'62 for one of the relics of Frobisher in the Countess of Warwick's Sound, on the north side of Frobisher Bay. The natives had told me where one of their people had thrown an anvil, some five years before, from a rock by the bold shore of Oo-pung-ne-wing Island into the sea. They were quite sure I could find this relic on the disruption and drifting away of the ice in the summer, providing I would be at the above-named island at some low spring-tide. Corresponding to their advice, I visited the island in the summer of 1862, and at low tide the rock bottom all about the place indicated from whence the anvil had been thrown, was just above water; but no anvil could be found; indeed, not a loose stone was thereabout. The shore-ice had licked up everything movable, not leaving even so valuable a relic as the one sought, three centuries old. The manner in which this relic was lost to the world any one can judge on reading what I have now written. The shore-ice having enveloped the anvil in its crystal walls during the winter season, on its being free from land in the succeeding summer, drifted away with what would have been to me a valuable treasure. Had that piece of shore-ice been seen by

some one at some particular time afterward, while it was wasting away, drifting and straggling about, no doubt but the anvil would have appeared as though deposited on it.

I come now down to the present time, to what can now be seen on and near the shore of this island. The present spring-tides have opened a rich field for study. They have by their wonderful action shown me how quickly they can transform the "thrice-ribbed ice" into dancing sparkling waters; how quickly they can tear away and destroy mountain barriers of ice, giving free waters for ships to sail in. These spring-tides have just been ripping up huge masses of ice lining the shores, and such ice as the winter's cold formed over the shallow waters near to the island on its western side. Could Parry and others who were puzzled extremely to account for the manner in which stones, sand, shells, and weed found their way upon the floe, but have seen what I have witnessed this evening, they would no longer have had any question about the matter. There is one mass of ice lying within a couple of stone-throws of my *tupik*, which is some 6 feet in thickness and 50 by 100 feet square. The ebbing tide has left one corner of this resting on another piece equally thick, which lies directly flat on the rocky bottom that is now bare from low tide. The position of this piece of ice, with its corner thus resting on another piece, is on an incline, showing its top, sides, and bottom most favorably. The whole mass consists of strata of stones, rocks, and sand and ice, the strata running parallel with the top and bottom of this frozen mass. From the top of this piece, stones are peering out. Near one end is a rock of 150 pounds weight, or more, nearly denuded of ice. As can be seen at the sides and ends, irregular thicknesses of layers of stones and sand occur. The upper part of this ice is much freer of those substances than the lower half. Comparatively, but few stones and small collections of sand are in the upper portion, while the beds below consist of an astonishing quantity. Indeed, the bottom is a stratum of nothing but rocks, stone, and sand that are glued together by invisible ice. Just above this bottom layer is a sheet of six inches in thickness of sea-ice, and then a little higher up, comes another layer of rocks, stones, and sand, following which is clear ice again. I should judge that at least *two or three tons* of earthy matter is frozen into that one piece of ice that I have just described. But this piece of ice is only one of the many that are now to be seen lying around on the rocks left bare by the ebb-tide. Some have only a few stones upon and in them. This feature is, however, plainly to be seen in nearly all, that the stones and ice are in strata. During the day much ice has

been drifting along by this island, and every now and then pieces of ice bore upon their surface stones and rocks fully exposed. As the waves lifted them up, rocking them to and fro, exposing one side or one end of each of these, strata of stones were to be seen. These masses of ice had been disengaged from a belt of hummocky floe that was a part of the fixed ice during the past winter in Haviland Bay. How these masses of ice charged with earthy matter get into the midst of a fixed floe overlying deep water is easily accounted for. A cold summer perhaps succeeds the winter, and before this ice is dissolved, another winter sets in and fastens it firmly in the midst of a new floe, or surrounds it with old hummocky ice; all of which becomes cemented together by the advancing cold, freezing weather. * * *

I must notice here what Parry says relative to the comparative times of the dissolution of the shore-ice and water rushing in torrents from the land in these northern regions: "It has been suggested that the floe may be held down by its firm cementation to the shore while the water from the land above it rushes in a torrent along its upper surface. This, however, is contrary to experience, which shows that long before the streams on the land are sufficient to effect this, the ice next the shore is completely thawed and detached from the beach, and, therefore, at liberty to float in the natural way."

If I understand Parry rightly he means this: that, from his experience, long before the snows on the land of this northern country melt—causing streams, some of which rush in torrents—the ice next the shore completely thaws and becomes detached from the beach.

Now, my experience is directly the reverse of this; that is to say, from what I have seen, long before the ice next the shore thaws and becomes detached from the beach, the snows on the land melt, causing streams—indeed, some, rivers—some of these streams and rivers rushing torrent-like down the mountain-sides and thence over the ice belting the shore, and over the ice covering the waters of many bays, coves, and inlets. At the present time, wherever I look, the land is almost completely denuded of snow, and has been so for weeks, while the shores of the mainland and of the islands are in many places still belted with the "ice-foot," as Dr. Kane termed the ice next the land.

Until now, Repulse Bay has been covered over, mostly with its fixed ice of last winter's formation, and this while many of the rushing torrents have long since dried up, their source—the melting snows—having disappeared. Wherever these streams run for a considerable time over the fixed floes, they cut their way—

a canal—completely through. Often in passing over the ice have I been checked in my course from meeting these winding, river-like channels in the ice, being unable to leap them, and obliged to make to the mainland that I might renew my course again. It is truly a wonder to me that Parry's experience was such as he has recorded. From what I have just written, no one will suppose that I wish to make torrents and more quiet streams from the land the means by which stones, sand, and shells, and weeds get upon or into the ice-floe, though I may say that occasionally such is the fact.

CHAPTER VII.

A SECOND WINTER LIFE—PREPARATIONS FOR THE FIRST SLEDGE JOURNEY TO KING WILLIAM'S LAND.

SEPTEMBER, 1865, TO APRIL, 1866.

CHAPTER VII.

PLANS FOR A SLEDGE JOURNEY IN THE SPRING—SEPARATION FROM THE INNUITS—EBIERBING, TOO-KOO-LI-TOO, AND AR-MOU'S FAMILY REMAIN WITH HALL—HIS INTEREST IN THE DEER-HUNTS—DANGER TO LIFE EXPERIENCED—AN AURORA DESCRIBED BY HALL AS SEEN FROM HIS BED ON THE ROCKS—LARGE NUMBER OF DEER SLAIN—HALL'S REINDEER DEPOSITS—SEVERE GALE—TOO-KOO-LI-TOO'S REMEMBRANCE OF THE BROOKLYN LADIES WISHING HER TO DRESS LIKE CIVILIZED PEOPLE—EXPOSURES ON VISITING THE DEPOSITS—FAILURE TO CATCH SALMON—HALL'S DAILY SUBSISTENCE—HE PREPARES SKIN GARMENTS—REMOVAL TO NOW-YARN—NEWS OF THE DROWNING OF AR-TOO-A—FEASTS AND AMUSEMENTS AT NOW-YARN—VISIT TO OO-GLA-RI-YOUR ISLAND—TROUBLES WITH THE NATIVES—RECONCILIATION AND ENCOURAGEMENTS—TEMPERATURE OF THE WINTER MONTHS—FREQUENT AURORAS—READINESS FOR A FORWARD MOVE TO KING WILLIAM'S LAND.

The experience of the first Arctic year has been detailed, and its journals have given an insight into the daily life to which one was necessarily subjected who looked forward to the accomplishment of a "mission" through assistance furnished by the Eskimos. The details of a second winter life among the same people would not be profitably presented in the cases in which almost identically like experiences were passed through. This chapter, therefore, will offer but the thread of Hall's occupations during this period, with a recital of such occurrences as were new to him from his changed location, partial isolation from the larger number of his Innuit friends, and necessary self-dependence for subsistence and for a preparation to renew his advance

toward King William's Land. His plans for the next year involved the securing of the continued friendship of the Innuits, and the storing of sufficient provisions for a long sledge journey, as well as for maintaining life through the approaching winter.

The larger part of the tribe now located themselves in places at some distance from him; at first, going off to the lakes above North Pole River to hunt, and, after their return, living nearly all the rest of the season at the point named on the map (page 211) as Now-yarn Harbor. Between this and Fort Hope visits were at times exchanged, and, during the two mid-winter months Hall lived with the natives at Now-yarn. Ebierbing and Too-koo-li-too, from the first, remained close by him, and for the sake of the latter who expected to give birth to a child, *Ar-mou's* family by the consent of the chief, *Ou-e-la*, remained for some time at Fort Hope. For the same reason, chiefly, Hall himself did not accompany the party to the lakes.

He soon became deeply interested in the deer-hunts, making himself a good marksman, and being rewarded with a large success. During the month of September, and until the migrations of the deer ceased in the month following, his notes are full of wearisome pursuits, made almost daily over the rough hills and the hummocks of the sea-ice

The record of one of these hunts is this: Leaving his hut with Ebierbing at 8 a. m. of September 10, at midday, when three miles north of their home, they first saw a band of seventeen deer one of which Hall succeeded in killing. Making a deposit of this, and traveling two miles further, they sighted two others which were resting on the plain The hunters cautiously concealed themselves behind the rocks, and when the animals had come near to them, brows-

ing, Ebierbing crept across the plain, making it impossible for the deer to cross in front of a little lake near by without exposing themselves to his clear aim. The hunters, however, found themselves in the embarrassing position that neither one could fire without endangering the life of the other. Just as Hall had taken aim, he remembered Ebierbing, dropped his rifle, and hid himself behind the rocks at the moment when Ebierbing's ball which had passed through the first deer, whizzed close to his head. Seeing, however, that his companion had now, in turn, hid himself, he shot the second deer, giving Ebierbing the pleasure of a possible experience like his own. Each felt that he had made a narrow escape.

Securing three more from the next herd, they skinned their prizes, and, as the sun was now setting, determined to remain and cache them the next day. For their sleeping-place they built a wall of stones on the windward side of a bed of moss on which, after smoking, chatting, and supping on raw venison, they fell comfortably asleep, each having one of the deer-skins for his bed, another for his pillow, and a third for his coverlid. They awoke to find their coverings hard frozen, ice to the thickness of three-eighths of an inch having formed during the night on the pools of water near them; but at an early hour they made their caches of the deer, loaded the packs of skins upon their backs, and continued the hunt throughout a second day, securing, however, but one more animal.

Neither the fatigue of the journey nor the excitement through which Hall had passed prevented him from writing while on his rough bed:

> The evening glorious, the clear sky, the moon, the stars! and now, at 9h., the aurora grandly playing its fantastic tricks. Was ever man more blest with an

opportunity for observing some of Nature's grand order of creation than I to-night, here on my back, with the heavens stretched out and moving, panorama-like, before me? O, the wondrous workings of the aurora! Their mysteries seem past finding out. The more I see them, the less I know. The display to-night most gorgeous. At first, the low extended arch to the southward—its slow rising—the dancing beams flying to and fro from one end of the arch to the other—the arch multiplied into others in beautiful disorder—the prismatic fringe at the base of the rays. As the now several arches get higher and higher they become more and more lively. Now they shoot up to the zenith, and their motions become too quick for the eye to follow them. Now the upper heavens are filled with the aurora as though in battle; sublime and inspiring. I cannot describe the scene; I can simply behold, and praise God, the author of these glorious works.

During the month of September ninety-three deer were deposited, and within the next month and the first week of November fifty more were secured; in the latter part of September they were frequently seen in large numbers, and Hall estimated that as many as a thousand passed in one day. The Innuits at the lakes, who were not equally fortunate, said that the prevalence of the southerly winds had kept the deer lower down, near the seashore. A few were seen by Hall as late as the 27th of January; these were, at the time, going northward. They did not again appear until the end of March, when the does that were with young had begun their migration. Their rutting season had been in October, during which, frequently, they were more readily captured.

The details of labor and exposure to which Hall subjected himself when depositing the carcasses of his slain animals are as interesting as those of the hunt. One record will suffice. It is largely condensed from his notes, throughout the fullness of which no items are found which would tempt one to suspect that the account is one of exaggerated trials. They bear on their face the simplicity of that truthfulness which it may be here said, once for all, has been conceded on all sides

to have been a marked element in his character, and which his steadfast companion, Ebierbing, has uniformly claimed for him.

On the 20th of October, at 8 a. m., in the midst of a gale with snow and flying drift, the two went out to make deposits of the deer which they had killed the day before. With rifles in hand, they crossed hill and valley to Hall's own favorite deer-pass, where he had been accustomed to watch for the animals behind his stone wall. The first labor was to recover here his double-barreled gun from a deep snow-drift, and this required of both, a laborious shoveling of twenty minutes. Following the ridge of high land from the deer-pass south toward Gibson's Cove, they came upon their five slain animals, the last one they had shot being a big buck. It had been left unskinned, and the legs only were frozen. The skin was taken off, and the carcass disemboweled and cut into the three principal pieces, which were dragged a little way further to a stony spot, where the weight of a ton and a half of rock was piled upon them; the bristling antlers were left projecting above to mark the cache To find rock and stones for covering the other three animals, Hall climbed the highest part of the ridge, where, by heavy pounding, he and Ebierbing secured two and a half tons. When they had dragged two of the deer up this hill, a rest was made for lunch on some of the unfrozen legs and for a smoke; but to light their pipes a match was struck after many trials only, and by their crowding down into a deep snow-bank and bending their bodies and heads over for a roof against the storm. As they sat enjoying their puffing, the sight and the noise around them were such as would have struck terror and dismay into the heart of any one inexperienced in Arctic life. The darkening clouds of sharp, cutting, blinding snow flying on the wings of the gale, the howling of the

storm, and the cold, frowning, icy rocks, although sheltering them for the moment, were enough, Hall said, to make one exclaim, "None but devils should be doomed to such an unmerciful punishment." On returning to their third deer, they found that the foxes had dragged off the head and nearly cleaned off the meat. The paunches of all three were then buried within a skin in a snow-drift; to be recovered when the gale ceased The first animal which they had killed and sledded upon a skin some distance further on, was also cached with hard labor. The whole day's work had been in the teeth of gale and drift.

Entering the hut, on their return, each seemed to the other a pillar of snow, until they had for a long hour pounded and threshed their native dresses with their *ar-row-tars.* But they brought in with them a good store of food, for Ebierbing had carried on his back, two legs and five slabs of meat, beside much tallow, with *e-ver-tu* (sinew) for thread. Hall had on his shoulders, with his gun, a substantial saddle of meat. Their stores left outside had been also made "safe in the midst of the storm from the jaws of the fox, the wolf, and the equally hungry crow."

TOO-KOO-LI-TOO.

The gale continued unbroken for five successive days. Hall notes this as unexampled in his experience as regards its constancy, force, and direction, of which he made entries in his meteorological

record. Too-koo-li-too expressed a wish that the lady who told her at the Brooklyn fair in New York that Innuits ought to dress like ladies in the States, could herself take a minute's walk only at this time over the hill near by, when she would be very glad to change her fine hat and hoop-skirts for any one of an Innuit's rough dresses.

The journals of November 29 and 30 have interesting notes of refraction and of a parhelion. The 29th was a gloriously fine day, although rather cold, the mean of four observations of Hall's thermometer No. 5 being 65°.4 below freezing-point. From midday till evening the sky was cloudless and the air calm. At $10^{h.}\ 12^{m.}\ 41^{sec.}$, mean time of Fort Hope, the lower limb of the sun was half a degree above the sea-horizon. The place of Hall's observation was on the crest of the hill back of his *igloo*, directly opposite Beacon Hill; the *igloo* and the hill being on opposite sides of the small stream known as North Pole River.

At sunrise and for a half hour later, the refraction south and east was very great; for Southampton Island loomed up from ten to thirty minutes of arc above the sea-horizon. The island is never visible from the place of observation named, except by refraction; and Hall had frequently looked in vain for it from elevated points in the neighborhood. Cape Frigid, the most northerly point of Southampton, lies in about lat. 66° N., long. 85° 25′ W., by Parry's chart; and by the same chart, the junction of the river with the headwaters of Gibson's Cove is in lat. 66° 32′ N., long. 86° 50′ W., the last of which positions, however, Hall believed, involves an error in the chart, of seven miles. The cape was forty-seven geographical miles distant, but the refraction was so great that Hall saw not only that point, but the coast on both

sides of the island far down southward. Nearly the whole entrance to Repulse Bay from Beach Point easterly, had land looming up above the sea-horizon in a thousand fantastic and constantly-changing forms. Before and at sunrise a zone of about five degrees in width from the horizon up was of resplendent colors, extending completely around the heavens; that half of the circle which was opposite the sun being the more gorgeous. On the going down of the sun the glowing zone was again in view. Such a display is not unusual in fine weather during the Arctic winter.

At 11 a. m. of the 30th, he was on the top of Oven Hill, viewing the sun and a splendid parhelion 22½ degrees east of it. On account of the cloudiness of the heavens, there was no corresponding parhelion visible on the opposite or west side of the sun. In fifteen minutes after the time given above, the sun became completely obscured by clouds; but the parhelion continued shining almost as brightly as though it were the great luminary itself. Thinking to improve the occasion in determining the illusion to be a complete one, he hastened down to the *igloo*, called Ebierbing and *Ar-mou*, and requested them to point out to him where the sun was. They both pointed directly to the parhelion with the utmost confidence that it was the true sun; their very looks at him bespoke the unmistakable sentiment, "Any man that is not blind can see that *there* is the sun!" Hall smiled, and then his "good native friends" scanned to the right and left of what they really thought to be the sun; but their assurance remained the same. He then pointed 22½ degrees to the west of the phenomenon and told them that in that direction was the sun. "At this time it wanted only fifteen minutes of being apparent noon, when, of course, the sun would be due south of them. A moment's reflection on the part of Ebierbing and

Ar-mou then satisfied them that it was only a mock-sun they had beheld."

Visits to the deposits like those made during the autumn were repeated through the winter as often as the necessities for food required. On the 2d of December, Hall started up North Pole River with two dogs for a team and a deer-skin for a sledge. He found half a saddle eaten by foxes, or perhaps by some smaller animal, which, from the Innuits' description, he thought must be the weasel. This deposit he had made on ground six feet above the river-level; but a six-day gale and storm had formed anchor-ice on the boulders in the river's bed, bringing the waters up from their passage under the ice to overflow it a long way down the estuary before reaching the sea. The deposits made on the banks were therefore almost entirely lost. When he had attempted, a few days before, to open this cache by the use of sharp stones as wedges and of boulders for his hammers, he had succeeded only in making a few crevices, but through these the depredations had now been made. On this visit he fastened his dogs by their draught-lines to the rocks; but they no sooner saw the chips of the frozen meat flying right and left from the blows of a dull ax, than they began a yelping, barking, and springing to be loosened, which continued through the two hours he was at work. "With much patience exercised in those hours of profuse perspiration," he secured the larger part of the meat, and then unfastened his dogs to revel on the scattered morsels and gnaw at the mass mixed with the ice and stones. The larger fragments and chips, placed on the deer-skin sledge out of their reach, were drawn back to the *igloo*.

On a second journey for a like object, made in the month following, he set out with *Nu-ker-zhoo* from Now-yarn before daylight, the

moon a few days past full, and the temperature, 46° below zero. They expected to remain out through the following night, yet took no additions to their winter traveling-dress. A snow-knife was carried to cut out their *igloo*. The bracing air incited the dogs to their full speed, so that after crossing the sea-ice and ascending a small ravine on the surface of a rivulet leading up from a fiord of the bay, by sunrise they were twelve miles from the *igloos* and near the deposit. The land in the neighborhood was extremely low; that lying far to the north and east was high—called King-naw by *Nu-ker-zhoo*. A fresh breeze added new stimulus to a work of profuse perspiration despite the intensity of the cold; but before dark they had returned home, dragging with them on their sled four heavy packages of venison-saddles sewed up in deer-skins. It had been necessary to re-ice the runners of the sled with moss. Their breakfast of raw frozen meat had been eaten under the protection of the snow-pillars supporting two *ky-aks*.

No subsistence but the deer-meat was found during this season, excepting occasionally a few salmon, or as many as a dozen partridges. Hall attempted to catch salmon in a lake three miles east of Beacon Hill, where he baited many hooks in holes through the fourteen-inch ice. Dr. Rae, in 1853–'54, had found this lake well filled, but Hall did not get a bite. The story of the natives was that no fish had been caught in this lake since Rae lost his net in it. Presents were more than once brought in of salmon from 30 to 36 inches in length, which were either eaten raw or parboiled in fresh water, making, when fat, a rich soup

The provisions which had been brought to Fort Hope were sparingly used. The main dependence was upon venison, which was usually taken raw, with *tood-noo* or seal-blubber (often old and rancid)

for butter. A favorite dish with both Hall and the Innuits was sea-bread soaked in ice-water sweetened with molasses; with this he often treated his visitors. At times his storehouse was filled with meat, and a season of feasting ensued; often, however, through failure in recovering deposits, or through caprice in the Innuits, he was placed on short rations. One extract from the record of January 21 will show his condition at such times:

I arise usually between seven and eight in the morning, and then smoke a little, which for a time makes me feel less hungry. After a while I cut a few chips from whatever little choice block of venison I may happen to have, and eat the same raw and hard frozen. As eating venison alone is dry work unless one has *tood-noo*, I eat seal-blubber, which is old, of strong odor, and of strong-old-cheese taste. About 4 ounces of venison and 1 ounce of blubber make my breakfast. Had I abundance of the former, I should eat nearer 4 pounds than 4 ounces, for it must be remembered that it takes a great deal of the venison of this country to supply one's appetite and necessities in the winter. In the neighborhood of noon (really there is no particular time of one's taking his meals when living as the Innuits do), I dine on what would be called old, stinking, nauseating whale-skin; but *to a hungry soul every bitter thing is sweet*, and I, indeed, find it so. Some of the effects on eating the first few times of this *muk-tuk* (whale-skin) are severe griping pains in the stomach and bowels, followed by copious diarrhea. Nearly every Innuit, great and small, in the village, as well as myself, has suffered thus by eating this whale-skin; there were seven patients on my hands one day last week suffering with the above-named complaints. For my lunch, or supper, I pick out the fatty substance of a whale-fin, and eat with it a little more of my *took-too* meat, about the same amount as for breakfast, topping off with delicate slices of raw whale-beef, or of the aforesaid whale-skin, and go to bed hungry; but as soon as asleep I dream of friends and *better times coming.*

From the scarcity of fuel, little cooking could be done. But the customs of the Innuits now required Too-koo-li-too in her peculiar condition to eat nothing but cooked meat, and an additional drain was made upon their small store of fuel in drying skins for their clothing. The seal-oil, which had been so industriously collected, had suffered

from the depredations of the bears and the wolves, and the heather which had been gathered, was mainly used, toward spring, in browning a supply of coffee for use on the proposed sledge journey. Coffee was served only when Hall wished specially to please his visitors. A corn-meal pudding was not relished, because of his long-continued use of raw meat. "A reindeer-head, with a complement of *tood-noo* and the paunch-contents stewed in water and reindeer-blood, was a rare and savory dish" Oil was sipped, and tallow and marrow in considerable quantity eaten every day with the raw frozen venison. He was thus enabled to bear much cold without suffering; and he says, with a dry humor, that sometimes while feasting on *tood-noo*, he was apprehensive of a like fate with the Innuit who, after drinking a large quantity of water with his melted *tood-noo*, died from the formation of a huge tallow candle in his stomach.

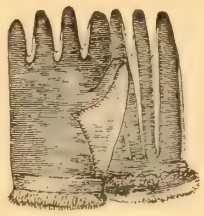
So much for often sipping train-oil and eating whale and seal blubber; all of which three articles are to Innuits and myself what butter is to those in civilized lands. Besides, I frequently feast on tallow candles, which word I use as a figure for pure deer's tallow; but really I have made excellent dip-candles of *tood-noo*, and, not having use for them, have eaten them with the same good relish as though the tallow was not made into candles.

The water-supply at Fort Hope was obtained from North Pole River, through a hole chiseled in the ice about six inches in diameter. From the surface of the ice to the water was three feet. When snow filled this hole, new ice formed daily to the depth of three inches; at other times, six inches of ice were removed before water could be obtained. On one occasion, when the temperature had fallen 20°, Hall was surprised to find but half an inch of ice under the snow. On the same day the heather-fuel was with difficulty ignited, although the circumstances were the same as at other times; he did not under-

stand either of these phenomena. His Innuit friends complained that in times of severe cold their fire-lamps were very dull.

According to an early-formed purpose, he and Ebierbing had begun in November to prepare enough deer-skins for their full winter raiment. This work comprised the different operations of drying, scraping, re-drying, and re-scraping described in Chapter IV. Too-koo-li-too, as a young mother, could not work on these. *Ar-mou* and his wife had already prepared their furs. Hall found himself a green hand in even the first of these operations, which gave him four times the work of an Innuit. It took two skins to make him a single *koo-lee-tang*, or native coat or frock. For a double one for winter use four were used.

To get sufficient warmth to dry the skins, they were hung around the "Conjurer," or small cook-stove, in the "snow kitchen"; and, as the heather could not be spared for the drying only, a quantity of coffee was browned at the same time. Ebierbing was able to use his needle so deftly that he made himself a pair of mittens of the skin from two deer-legs.



DEER-SKIN GLOVES.

Hall's clothing was now almost exclusively of furs. By the middle of December he had doffed his undershirt, and in February, his drawers; and for the rest of the season he dressed wholly like his Innuit companions. His experience as to the influence of imagination upon his sensibility to cold is noted in the fact that, on several occasions, when the Eskimos repeatedly expressed their surprise that he did not protect himself while making his observations outside of his *igloo*, he seemed unconscious of the increased cold; he had been

regarding his thermometer only, which, because of an air-bubble in the tube, did not indicate the true lower temperature of 20°.

Having always taken great care of his Arctic library, even in his removals from place to place, he again devoted his spare hours to study. Finding his books, in the early part of the season, in great danger of being injured by the dampness, he attempted by himself to build for them a new *igloo;* but, while cutting the blocks a short distance off, *Ar-mou* quickly cut out others from the spot on which the *igloo* was to be built, and surprised him on his return by presenting him with a completed dome. Not long after, Hall succeeded in building a cook-igloo, when *Ar-mou* and Ebierbing, skilled as they were in such work, showed their surprise that a *kob-lu-na* had built it so well; saying that they would never feel alarmed about him if caught out alone in the storms, for he could easily protect himself.

The removal to Now-yarn had taken place on the 1st of December, when Hall received a visit from *Nu-ker-zhoo*, *Ou-e-la*, and his half-brother, *Oong-oo-choo*, from their settlement at that place, about sixteen miles to the eastward. He was busy at his skin-dressing when *Ou-e-la* suddenly appeared, pushing in before him into the *igloo* a present of whale-blubber and *muk-tuk*. The approach of the party had not been noticed because of the thickness of the weather. Cordial greetings were followed by feasting through the evening, and after the *igloo* was sealed, a lengthy conference was held, as the result of which it was determined that Hall, with Ebierbing, Too-koo-li-too, and *Ar-mou* and his family, should spend the rest of the winter at Now-yarn.

The larger part of the stores being deposited amid the rocks, and Hall having made two trips to Rae's oven in which he now stored his medicine-chests and smaller articles, the move was begun under bright

moonlight, at 3 a. m. of the 5th. Twenty dogs drew out of the *igloos* very heavy loads of venison from the unconsumed stores. The larger part, however, was re-cached, while a number of fine deer-skins were necessarily abandoned. The two women, with their babes on their backs, led the way, a seat on top of one of the sleds being soon found for Too-koo-li-too, who had been sick. Hall and *Ou-e-la* walked by the first sled, Ebierbing and *Nu-ker-zhoo* by the second, and *Ar-mou* and *Oong-oo-choo* by the third. But the loads were too heavy for them to finish the rough journey to Now-yarn before night; the pile from one sled, therefore, was cached, and the sled put up on end, and walrus-lines hung from its peak to swing in the wind and frighten the bear and the wolf from the cache. The journey was finished at 3 p. m.

At Now-yarn the new-comers were cordially received with the usual feast of venison and *tood-noo*, and two new *igloos* were quickly built. Hall found the widows of *Ar-too-a* and *Sho-she-ark-nook*, and their mother in deep mourning, the long, coarse, raven hair of *Ar-too-a's* widow completely hiding her face, neck, and shoulders. News of the death of *Ar-too-a* had been brought to Hall by *Nu-ker-zhoo* and *Oong-oo-choo* some weeks before. *Ar-too-a* had gone out in his *ki-a* (or one-man boat) alone. This was contrary to Innuit custom, but he was known as a bold, venturesome spirit who never quailed to attack the bear with a single spear, or to hunt the fierce walrus far out on the ice; his death had been more than once predicted. At the time it happened, one of the Innuit women on the shore heard a cry of distress, and on her giving the alarm, two *ki-as* quickly pushed out into the lake. They found his boat and his implements, except one spear, but his body had sunk. It was supposed that while he was spearing one of a band of deer crossing the lake, some huge buck

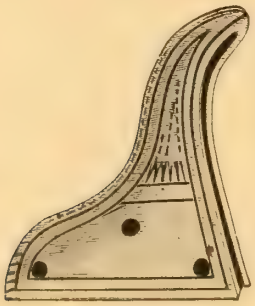
proved ugly, and in the encounter kicked up his heels, striking the boat, which was at once upset.

Hall notes the difference between the *ki-as* of this country and those of Greenland, Frobisher Bay, and Hudson's Strait:

> The *ki-as* here are of far less weight than those of Greenland—not so long or so wide. Indeed, they are not more than 25 pounds weight, while those on the west side of Davis's Strait ofttimes exceed 100 pounds. A Greenlander, or any Innuit anywhere from Hudson's Strait up to Northumberland Inlet, on getting into one of the *ki-as* of this country would capsize as quickly as a white man in theirs. Ebierbing at first could do nothing in them but roll over, *ki-a* and all. To get properly into one of these boats, an Innuit has to work and wiggle his body a long time. I cannot imagine how *Ar-too-a* managed, on getting capsized, to get his body out of his *ki-a*, so tight was he squeezed in when in it.

REPULSE BAY KI-A.

Elsewhere, he notes his surprise on learning that the natives complained that he had kept *Ar-mou* with him. They bitterly felt the loss of their *an-ge-ko*, and said that if *Ar-mou* had gone up with *Ar-too-a* to the lake he might have been at hand to save him. Old *Ook-bar-loo*, mother-like, held on to a hope that she would yet look upon her son.



KY-AK ORNAMENT.

The midwinter months, to the 8th of February, were passed comfortably with the natives at or near Now-yarn. The stock of provisions was ample, and hunting unnecessary as well as impracticable; the time was, therefore, spent mostly within the *igloos*, in the usual amusements and feasting the character of which has already been described. The number of souls in the village, including women and

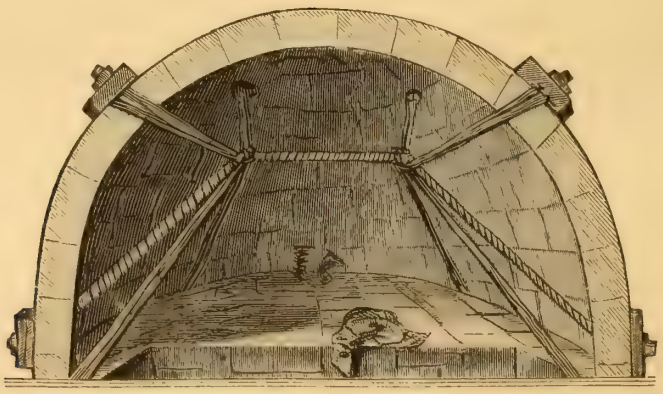
children, was forty-three. This number *Ou-e-la* counted up by keeping open with his finger for Hall the same number of leaves in one of his little volumes—the Book of Psalms. The Eskimos, as is well known, can generally count as far as ten, but after that, they only say, *am-a-su-it* or *am-a-su-ad-lu* (many, a very great many).

DEATH OF AR-TOO-A.

Almost every day the whole population came together for the feasts. At times, Hall showed his continued good-will by giving

special entertainments, at which he waited himself on the younger children, after feasting the adults. Free smoking assisted the good humor, when tobacco, as well as other articles, including desiccated vegetables, were drawn from the stores taken out with him from the United States. To leave no exception from his invitations, he urged old mother *Ook-bar-loo* to release Too-koo-li-too from the iron custom which was working against her at the time. The favor was granted, but Too-koo-li-too, from superstitious fear, declined to avail herself of the dispensation. Her babe, born September 16, was, in her judgment, yet too young.

Amusements necessarily formed a large part of the occupations of the village. Wrestling and other gymnastic exercises were not only much relished, but instinctively practiced with frequency, to maintain that muscular power of which the race were in conscious need for their success and personal safety in the hunt and in severe exposures.

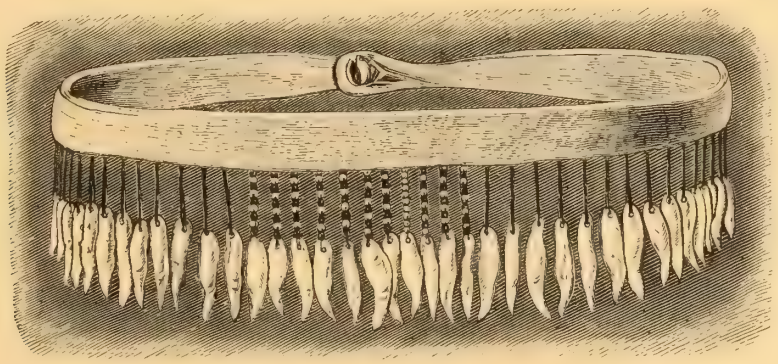


INNUIT TIGHT-ROPES.

The tight-rope was in use, stretched within the *igloo* by thongs of walrus-hide, which, with some skill, were securely fastened on the outside of the roof. Games of checkers and dominoes were often interrupted

by long yarn-spinning, chatting, and smoking. The dance and the masquerade ball were not infrequent.

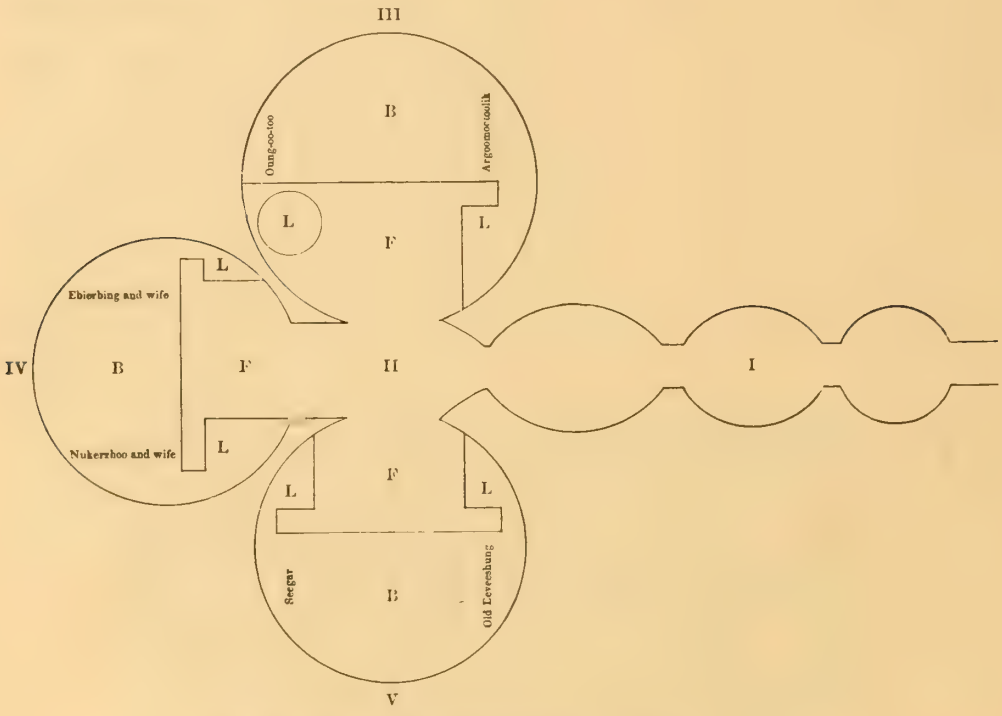
The first month of the new year had closed with a celebration of a unique character. Hall had announced to them the opening of the year by passing round through the connected snow-houses and shouting its coming with so loud a voice and at such an hour as even to frighten the people. They seemed to have reciprocated his attentions with interest. The whole day was busily spent in preparing for the masquerade and the dance; and when the ball opened, the most grotesque costumes imaginable provoked loud and continued laughter



INNUIT HEAD-ORNAMENT—SEAL-TEETH; BEADS FROM DR. RAE.

from all the company; for the garments had been hastily patched up from all the second-hand articles of clothing, such as pants, shirts, drawers, remnants, and pieces of cloth, calicoes, and stuff which had been picked up at times from the whalers; and these were put on by men, women, and children, even the smallest, with a studied care to make themselves ridiculous. The masks were of reindeer-skin. The performance came off in the triplet *igloo* of "*Nu-ker-zhoo, Ar-goom-oo-too-lik, See-gar* & Co.," where dancing to a late hour was accompanied by the *key-low-tik*, with monotonous singing, and a cheerful, tuneless

accordeon. Dancing in couples, dancing altogether, and dancing singly, filled up the hours.



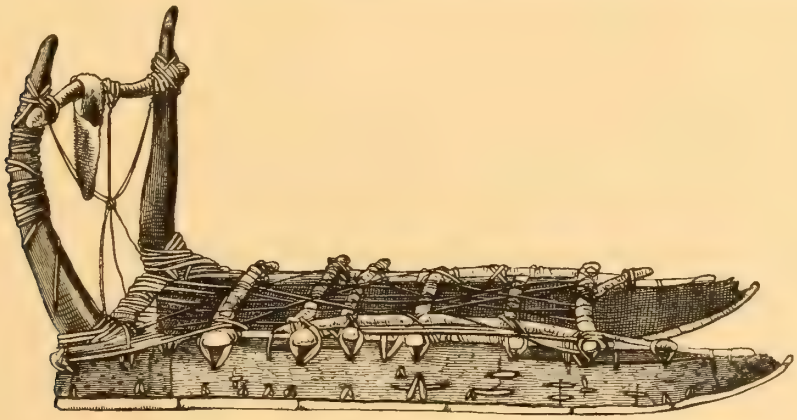
GROUND-PLAN OF THE FEASTING-IGLOO—SCALE, $\frac{1}{10}'' = 12''$.

I. Passage-way, about 6 feet high. II. Vestibule, 9 feet high. III. Igloo—floor to dome, 9 feet 3 inches; height of bed-platform, 2 feet 9 inches. IV. Igloo—floor to dome, 9 feet 6 inches; height of bed-platform, 3 feet. V. Igloo—floor to dome, 9 feet 5 inches; height of bed-platform, 2 feet 7 inches. B. Bed-platform; F. Floor; L. Lamp.

At the close of other entertainments when the storm did not shut them in-doors as on the occasion of Hall's feasting them on Christmas night, the boys harnessed up a team of little dogs and gave the youngest children a good sledge-ride on the ice of Repulse Bay. For such rides, miniature teams of puppies but two months old were sometimes driven with much skill by the young children; the puppies being harnessed by the line only, and the young drivers using the long whip

just as the men do. Their sleds are about two feet in length. The village, outside the *igloos*, was illuminated with "*nanny-roons*," or lanterns, some of ice, others of snow. Hall says, about these: "Really there is no occasion for any one to bring glass windows or glassware into this country, for King Cold gives us the material during nine months of the year. These lanterns are fine specimens of the handiwork of the race."

On the 3d of February, Hall and *Nu-ker-zhoo* made a very rough journey back to Oo-gla-ri-your Island, to recover a favorite artificial horizon, first used on the expedition of 1860 to 1862. The instrument was readily found by *Nu-ker-zhoo* on the surface of the snow, but in a damaged state; the woodwork eaten by foxes and the mercury wholly lost. The two were back at Now-yarn at the close of the second day, having passed one night in an *igloo* on the ice. On this trip of sixty miles they were more than once jerked from the flying sledge "like stones from a sling." On the island a native sledge was found, made



ESKIMO SLEDGE.

entirely of the jaw-bone of a whale. It was very heavy. The runners were 12 feet long, 10 inches deep, and 1½ inches thick, and were

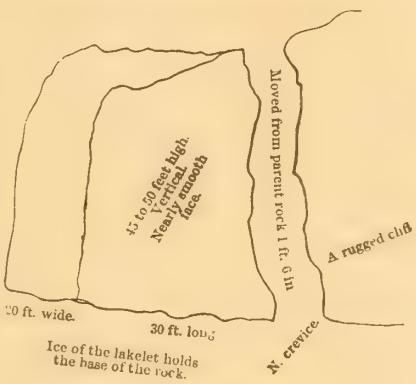
shod with the same bone; the cross-bars measured 20 inches. *Ou-e-la* said that it belonged to the father of the *I-vit-chuck* already named. Hall now spent several days in the busy work of surveying Now-yarn harbor and its vicinity, making the sketch of which the cut below is a fac-simile.

A cliff on the border of a neighboring inlet much interested him by the Innuit tradition with which it was connected. *Ou-e-la's* story was that, years before, two little girls while playing about this cliff, with infants in hoods on their backs, had gone into an opening between the rocks, which closed upon them before escape was possible. All attempts for rescue were unsuccessful, and the poor children, to whom for a time bread and water were passed, perished in the cliff.

On the 8th, Hall found himself back at his tenting-ground at the twenty-sixth encampment, near Dr. Rae's "Forlorn Hope"—Fort Hope.

On setting out in the morning, all Now-yarn had turned out to bid him "*ter-bou-ee-tie*"—a hearty good-bye. He left the kindly advice with *Ou-e-la* to be sure to send for him if any of the people were sick.

With his own Eskimos, and *Armou* and *Mam-mark*, he made the journey by four o'clock in the afternoon, the sledges being heavily loaded, and he himself preferring to pace the whole distance, carefully counting every fourth step. As soon after their arrival as new *igloos* were built, refreshments were served up, including a little brandy of such proof that it remained unfrozen at 50° below zero. The fair sex of the company eschewed the favorite *muk-tuk*, the brandy, and the smoking, *Mam-mark* having recently lost her *wing-er* (husband), and Too-koo-li-too's child being less than a year old. When Hall took his brandy, even after breathing for some time upon the flask, he was burned from mouth to stomach as by a stream of fire-coals;—impressing him ever after with the necessity of being as wise in first taking the frost out of the liquid as he was in taking it out of the nose of the flask.

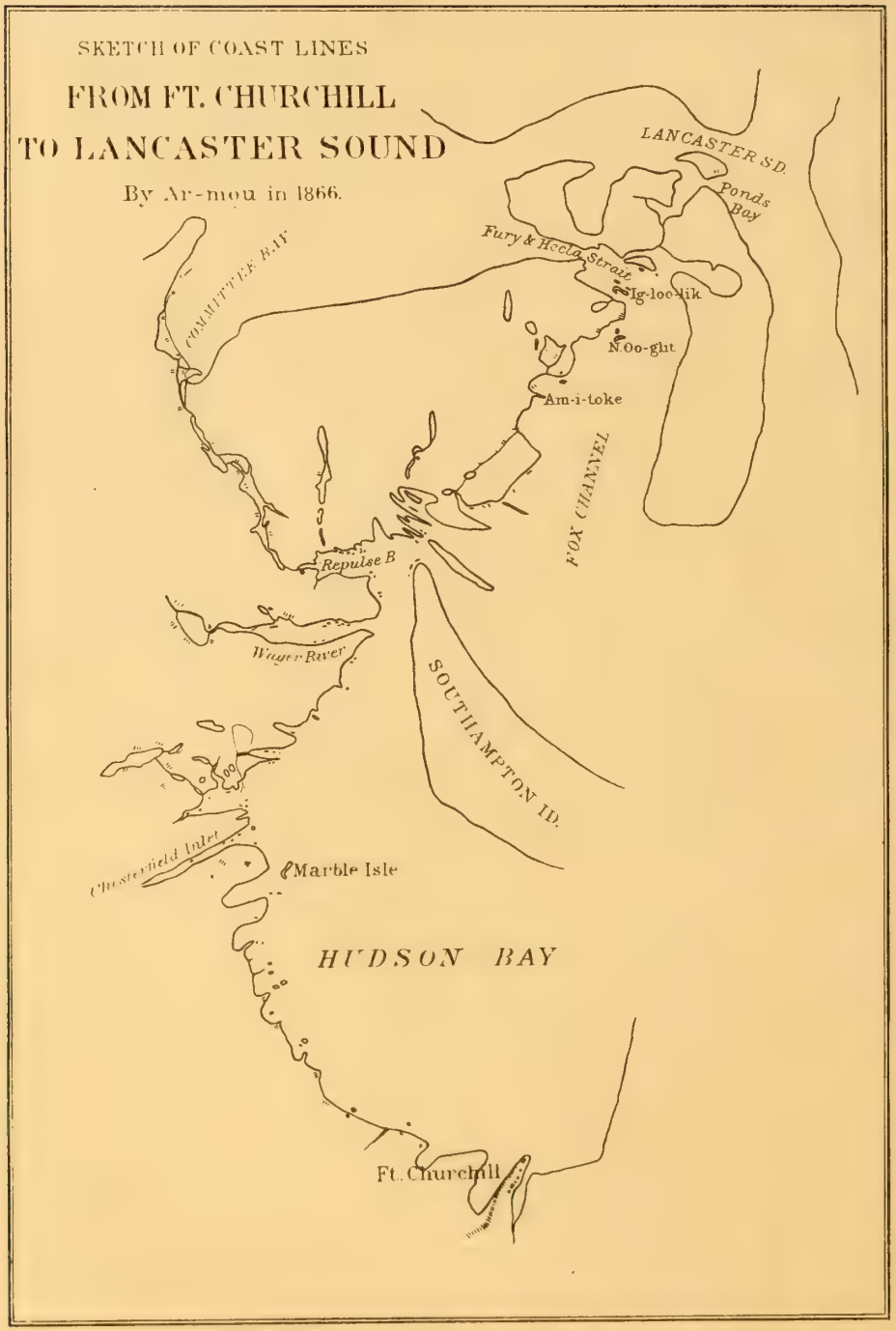

45 to 50 feet high. Vertical. Nearly smooth face.
Moved from parent rock 1 ft. 6 in.
A rugged cliff
20 ft. wide.
30 ft. long.
Ice of the lakelet holds the base of the rock.
N. crevice.
THE RENT CLIFF.

The next day, having occasion to visit Fort Hope, he was struck with its exposed position, and his notes express an admiration of Dr. Rae's ability as the leader of an expedition, for having wintered his party of 1846 within its gloomy mud and stone walls without the loss of a man. *Mam-mark* and others now spoke of their friends having seen Dr. Rae at Pelly Bay, as well as at Fort Hope. They knew *Oo-lig-buck*, Rae's guide, under the name *Mar-ko*, and among other

things which they related of this man, was the story that he became much alarmed by the accounts from the Iwillik people of the fierce and deceitful Neitchille tribe, and for this reason he had tried to desert Rae, but without success.

During the rest of the month of February and throughout March, Hall was quite willing to have for his companions the few only who had returned with him from Now-yarn. He needed rest from the frequency of visitations to his *igloo*, and quiet for maturing his plans for the spring sledge journey; but especially, relief from the misunderstandings and alienations occurring not infrequently at the village. It is easy to see that any estrangement from those on whom he as the only white man was dependent, and at times helplessly so, must have caused him much disquiet, beyond even the connection of this with the success of his plans. Some personal misunderstandings with *Ou-e-la* (the chief) and with *Ar-mou*, and others, had more than once occurred; and at one time he seems to have had good reason to believe that his life was in danger. But his control over the people continued to be strangely successful, and it so remained up to the close of the expedition.

The chief means of this success is readily to be inferred from the course of the narrative up to this date. From the time of his first meeting with the Innuits he had reciprocated the cordiality of their simple offerings, and had subjected himself to a conformity with their strange customs; he had ministered to their necessities in sickness, supplying both food and fuel; and had held out to them just expectations of further assistance from the whalers, and from his friends in the United States. His chief dependence for the needed control over them was in his supply of tobacco, often freely given as a present, but as a


SKETCH OF COAST LINES
FROM FT. CHURCHILL
TO LANCASTER SOUND
By Ar-mou in 1866.
LANCASTER SD.
Ponds Bay
Fury & Hecla Strait
Ig-loo-lik
N.Oo-ght
Am-i-toke
FOX CHANNEL
COMMITTEE BAY
Repulse B
Wager River
SOUTHAMPTON ID.
Chesterfield Inlet
Marble Isle
HUDSON BAY
Ft. Churchill

rule, dealt out as rations in exchange for provisions. When for two days he held out in a refusal to serve out this to *Ar-mou* (the Wolf), a personal contest was nearly brought on. "The savage," after several angry conferences with his fellows, again and again demanded the coveted weed; but even when he approached Hall to lay hold on him, he received the firm answer, "*Ar-mou* keeps his *muk-tuk*, Hall keeps his tobacco." This self-control seems to have had as much to do with closing the affair amicably, as any assistance that Ebierbing and Too-koo-li-too could render.

Other alienations had now shown themselves by the separation from him of the rest of the Innuits, and by their withholding from him their old gifts and even some of his own supplies, which might have been brought when he was known to be in need, from the whale cached in August; to say nothing of their forgetfulness to keep for him his accustomed place at the feasts. It is certainly creditable to Hall that he could exercise such self-control, and make full allowance for the circumstances in which he was placed, and in which he steadfastly purposed to abide. Some things he knew that he must probably misunderstand. His own determined purpose he could not. In despite of these adverse circumstances, he had not been without renewed encouragements. The leading men of the tribe had come and talked with him about his journey before he went over to Now-yarn, and when good humor prevailed there, had repeatedly entered into his plans, and committed themselves and their people to his assistance *Ar-mou* completed for him a chart of the waters and lands he had voyaged and traveled over in his lifetime. "It embraced a section of country from Pond's Bay (say in lat. 73° N., long. 76° W.) to Fort Churchill (lat. 58° 44′ N., long. 94° 14′ W.); the distance between the two places in a direct line being 966 nauti-

cal miles (by middle latitude sailing, 965.8; by Mercator, 959.8)." The coast which this native delineated, and with most of which he was well acquainted, exceeded six times this distance. With all the indentations of the coast from Ig-loo-lik to Repulse Bay, and thence to Fort Churchill, he still was familiar, except the further or most westerly extent of Chesterfield Inlet. He had been on Southampton Island twice; the first time drifting there on the ice while walrusing in the winter. From his map and from others drawn by natives, particularly from the sketch of Lyon's Inlet, to be found in a later part of this Narrative, Hall received valuable assistance on his subsequent journeys.

The occupations of the quiet stay at Fort Hope had included the selecting and preparing the necessary provisions and stores, and putting them up in convenient packages encased in strong bags of India-rubber cloth; such as could not be carried away being either cached or covered over in the Sylvia, which was secured from exposure. For Hall's personal comfort, *Mam-mark* made him a pair of *kod-lins*, or breeches, from the Siberian squirrel-furs presented to him the preceding season by his friend Captain Kilmer.

On the 30th of March, *I-vi-tuk* came merrily down to Fort Hope, with all the dogs belonging to *See-gar* and *Ar-goo-moo-too-lik*, to assist Hall on his proposed journey north. These teams, with some dogs which had been left with him by his friend *Ou-e-la*, were the best practical assurances of good feeling renewed with his old friends. During the winter he had almost despaired of securing a team, and his own stock consisted of but "two female dogs, equal to one good dog, and two puppies, equal to a quarter of a good dog." He had been unable to obtain others at a lower price than a double-barreled gun for each.

I-vi-tuk's coming enabled him to anticipate the day for the move toward Neitchille. Now-yarn had been abandoned by the scattering of the people to hunt and fish; *Ou-e-la*, for this object, was already upon the lakes.

Hall was ready to leave all the people in full good humor. He presented them with venison, and gave to the men letters to the expected whalers, in which he asked that such reasonable requests as might be made for ammunition and provisions should be granted; the compensation for these he expected would be made to the whalers by his two chief friends in the United States.

He had now a goodly party ready for the forward move, having only the regret that the women and children must accompany them. It may be questioned, however, whether his efforts to prevent this had been wise; nor did the sequel show that the women were really an incumbrance.

The METEOROLOGICAL NOTES kept in the winter quarters are of interest. The changing temperatures experienced during this second winter of seven months will be appreciated by the following quotations from some specific dates within that period:

The first snow of the season fell September 9; an inch only in depth; it assisted the hunters in tracking deer. Ice formed on the bay and river for the first time on the 12th of the month following. The canvas tents becoming uncomfortable, *kom-mongs* protected the party until they found enough snow on the 29th to build their *igloos*, and were driven into them by the sudden occurrence of severe storms.

The snow-drift of this date prompted Hall to say:

I defy any man to make true observations of the number of inches of snow that falls on an average during the winter in the Arctic Regions. Drift and

falling snow are all intermingled, and both are swept along over the earth at a speed that, sometimes I think, should take them round the great globe in forty minutes. Ofttimes the shrewdest natives cannot tell whether it is simply drift flying or both falling snow and drift.

The weather at times during November was so warm that the roofs of the *igloos* needed rebuilding. Repeated applications of new blocks were made to the places from which the melted snow was dripping.

The 22d of January, 1866, was a hurricane day. Within the *igloos* buried deep under the drift, the howling of the storm was heard throughout the night. The women, rising first as usual, cleared the passage-way, and came back from its mouth to tell of the tempest. At nine o'clock Hall attempted to go outside to make his observations, but as he stepped beyond the wind-proof wall of snow-blocks which shielded the entrance-way to the tunnel, he was instantly knocked heels over head. On raising his head, for one instant he saw the snow flying; the next, he was blinded; but by little and little he worked himself, directly in the eye of the hurricane, till he struck on what he knew to be one of the snow-walls of the tunnel. He says that "the whole world around seemed one mighty snow-drift, and if he had any consciousness at all, it was that he felt as though he were in chaos. Heaven had his first thanks, and the Innuit who built that snow-wall his second."

On the 10th of February a hurricane prevailed all day, charged with a temperature of -40°. At one time, one of the dogs was found entirely buried under the drift, his line being too short to let him keep upon the surface. When released he was a happy dog; even before eating, "brisk as a cricket."

Auroras were of frequent occurrence throughout the winter, except during the month of January. More than once, on witnessing them, Hall finds the question arising in his mind—

Why is it that the aurora is almost always seen in the southern heavens?* Why do we not see the same north of us? I have seen the aurora at Wager Bay, at Noo-wook, at Depot Island, and from various places about Repulse Bay, and almost uniformly the phenomena is seen southerly of the point wherever I happened to be. The same was true in my previous voyage (1860–'62)—that the aurora was seen south. In this connection I would state that from all I have been able to learn in the many close observations I have made during their displays, the aurora is generally not far distant—ofttimes within a few hundred feet—and continues within a stone's-throw of one's head. If an army of men were close together in line, and extended from here to York Factory, I am sure each man would see the auroral displays all south of him; and yet the most distant displays would not exceed ten or fifteen miles, while the most would be within a half to three miles of him.

On November 7 the rays of an aurora shot horizontally to the eastward, in the direction of the magnetic meridian. At 7 p. m. of the 10th, a thin auroral veil covered the sky, lasting twenty minutes.

On the 6th of February, the passage-way of Hall's *igloo* was flooded with the light of an aurora. On going out, he saw—

A long belt, extending far east-southeast and far west-northwest, the center of it a trifle south, but apparently within a pistol-shot. The rays were all vertical, and dancing right merrily. This whole belt was remarkably low down—that is, apparently not more than 50 or 75 feet from the earth—and along the base of it, from end to end, was one continuous stream of prismatic fires, which, with the golden rays of light jetting upward and racing backward and forward—some dancing merrily one way, while others did the same from the opposite direction—made one of the most gorgeous, soul-inspiring displays I ever witnessed. The Innuits, nearly the whole of whom witnessed the grand sight, kept up, as they always do on such occasions, their charming music—that is, whistling. The display lasted but a few minutes.

* Between the parallel of 50 degrees north and that of 62 degrees north, auroras during the winter are seen almost every night. They appear high in the heavens, and as often to the south as to the north. In regions *further* north they are seldom seen except in the south. Loomis, p. 187.

The following night something of a like display was witnessed. A single streak of aurora shot up from the south, and in a few moments the whole horizon was alive with the dancing fires of the

AURORA SKETCHED BY HALL.

north. On the 19th there was a display of aurora, upon which the wind had no apparent effect, although a gale was blowing.

On the 10th of March—

A wondrous display stretched across the southern heavens from east-south-east to west-southwest. The eastern half was in the form of an arch with verti-

cal rays, while the western half was convolved in such vast glowing circles that nearly a quarter of the heavens seemed on fire. The eastern half consisted of bosses or birch broomheads, springing into life and dancing merrily to and fro along the vertex of the highest rays forming the arch; to each broomhead was a complete nucleus, well defined, about which the rays, inclined about 45° to the east, played most fantastically. One was quite alone in its glory, for not only had it the embellishments of its sister broomheads, but golden hair radiated from its head in all directions.

[With Hall's notes it may be interesting to compare those made by Lieutenant Weyprecht, of the Austrian ship Tegetthoff, while witnessing the auroras of the Eastern Hemisphere.]

There in the *south*, low on the horizon, stands a faint arch of light. It looks as if it were the upper limit of a dark segment of a circle; but the stars which shine through it in undiminished brilliancy, convince us that the darkness of the segment is a delusion produced by contrast. Gradually the arch of light grows in intensity and rises to the zenith. It is perfectly regular; its two ends almost touch the horizon and advance to the east and west in proportion as the arch rises. No beams are to be discovered in it, but the whole consists of an almost uniform light of a delicious tender color. It is transparent white, with a shade of light green not unlike the pale green of a young plant which germinates in the dark. The light of the moon appears yellow, contrasted with this tender color so pleasing to the eye, and so indescribable in words, a color which nature appears to have given only to the Polar regions by way of compensation. The arch is broad, thrice the breadth, perhaps, of the rainbow, and its distinctly marked edges, are strongly defined on the profound darkness of the Arctic heavens. The stars shine through it with undiminished brilliancy. The arch mounts higher and higher. An air of repose seems spread over the whole phenomenon; here and there only a wave of light rolls slowly from one side to the other. It begins to grow clear over the ice; some of its groups are discernible. The arch is still distant from the zenith; a second detaches itself from the dark segment, and this is gradually succeeded by others. All now rise toward the zenith; the first passes beyond it, then sinks slowly toward the northern horizon, and as it sinks, loses its intensity. Arches of light are now stretched over the whole heavens; seven are apparent at the same time on the sky, though of inferior intensity. The lower they sink toward the north, the paler they grow, till at last they utterly fade away. Often they all return over the zenith, and become

extinct just as they came. * * * But, again, another form. Bands of every possible form and intensity have been driving over the heavens. It is now 8 o'clock at night, the hour of the greatest intensity of the northern lights. For a moment some bundles of rays only are to be seen in the sky. In the south a faint, scarcely-observable band lies close to the horizon. All at once it rises rapidly and spreads east and west. The waves of light begin to dart and shoot; some rays mount toward the zenith. For a short time it remains stationary, then suddenly springs to life. The waves of light drive violently from east to west; the edges assume a deep red and green color, and dance up and down. The rays shoot up more rapidly; they become shorter; all rise together and approach nearer and nearer to the magnetic pole. It looks as if there were a race among the rays, and that each aspired to reach the pole first. And now the point is reached, and they shoot out on every side, to the north and the south, to the east and the west. Do the rays shoot from above downward or from below upward? Who can distinguish? From the center issues a sea of flames; is that sea red, white, or green? Who can say—it is all three colors at the same moment! The rays reach almost to the horizon; the whole sky is in flames. Nature displays before us such an exhibition of fire-works as transcends the powers of imagination to conceive. Involuntarily we listen: such a spectacle we think must be accompanied with sound. But unbroken stillness prevails; not the least sound strikes on the ear. Once more it becomes clear over the ice, and the whole phenomenon has disappeared with the same inconceivable rapidity with which it came, and gloomy night has again stretched her dark veil over everything. This was the aurora of the coming storm—the aurora in its fullest splendor. No pencil can draw it, no colors can paint it, and no words can describe it in all its magnificence. And here below stand we poor men and speak of knowledge and progress, and pride ourselves on the understanding with which we extort from Nature her mysteries. We stand and gaze on the mystery which Nature has written for us in flaming letters on the dark vault of night, and ultimately we can only wonder and confess that, in truth we know nothing of it. He who has seen its phenomenon in its full splendor, when in the vast silence the entire vault of heaven seems to consume in flames of intense colors, when streams of fire, furious and frantic, in wild chase all around, rush upward to the zenith, he who has observed the excitement which in such moments manifests itself in the elements of Terrestrial magnetism—to him it must become a life task to aid in removing the thick veil which shrouds this mysterious exhibition of Nature's power. Although in most intimate connection with the disturbances of Terres-

trial magnetism and utterly inseparable from it, still it is out of our power to discern the links which chain them together. Theory after theory has been proposed, but none is adequate; the obscurity which lowers over this indescribable phenomenon is as intense to-day as a hundred years ago. ("New Lands within the Arctic Circle.")

CHAPTER VIII.

FIRST ADVANCE TOWARD KING WILLIAM'S LAND—SLEDGE JOURNEY TO COLVILE BAY AND RETURN.

MARCH 31 TO MAY 25, 1866

CHAPTER VIII.

START FOR KING WILLIAM'S LAND MARCH 31—HALL'S COMPANIONS—HIS EXPOSURE—WALKS BEHIND THE SLEDGES—GALE-BOUND—INNUIT LEGENDS OF THE WOLF AND THE BEAR—AN-KOO-TING FOR TOO-KOO-LI-TOO'S SICK INFANT—UNCERTAINTY OF THE GUIDES—DR. RAE'S CHART FOLLOWED—LETTERS SENT BACK TO THE WHALERS—TARDINESS OF THE NATIVES—RENEWED AN-KOO-TING FOR THE CHILD—FURTHER DELAYS—ICING OF THE SLEDS RENEWED—THE SEA OF AK-KOO-LEE REACHED ON THE TWENTY-EIGHTH DAY OF A JOURNEY, ONCE MADE BY RAE IN FIVE DAYS—MEETING WITH NATIVES FROM PELLY BAY—THEIR ACCOUNTS OF FRANKLIN'S SHIPS—RELICS OBTAINED FROM THEM—INTIMIDATION OF HALL'S MEN BY THESE NATIVES—HALL COMPELLED TO RETURN FROM COLVILE BAY—LEAVES A DEPOSIT AT CAPE WEYNTON FOR HIS NEXT JOURNEY—BURIES TOO-KOO-LI-TOO'S CHILD, "LITTLE KING WILLIAM"—ARRIVES AT BEACON HILL MAY 23—THE INNUITS AGREE TO GO BACK THE NEXT YEAR.

The first page of the Note-Book for the last day of March, 1866, has on its face, in bold writing, "*Now for King William's Land! Up at* 4 *a. m. and getting ready for a start.*"

The wind was fresh from the north-northwest, and the temperature "50 degrees below frost-point," yet Hall decided to make his first advance of five miles as far as *Ou-e-la's* resting-place on North Pole Lake, and from that point to send forward two sledge-loads of stores, after which, before setting out finally on his journey, he would make a safe deposit of his records at the base of Beacon Hill on its northeast side. Ebierbing, *Ar-mou*, *Nu-ker-zhoo*, young *She-nuk-shoo* and his mother, with Too-koo-li-too and the families of *Ar-mou* and

Nu-ker-zhoo, made up his party. He remained behind for a little while to compare his chronometers, and, after "rendering thanks for (his) innumerable blessings, to ask protection on departing for a country where dangers would be found on every hand." Following the tracks of the sledges as well as he could trace them through the increasing drift, he soon overtook his party. All the other natives who had been at this time at the encampment had now gone off in different directions, some toward Now-yarn and others to the lakes.

The gale became very severe, beating fiercely and directly in the face of one who was poorly prepared to bear it from his having eaten little or no food for several days. In writing of this, he says there had been before him an abundance of such as he would have relished if he could relish anything; but he had been so busy in writing and so enwrapped in anxieties that he had little or no appetite.

Let one who has had the like experience as mine, with no other people but savages to deal with, say whether my task has been an enviable one during all the time of making every due arrangement and preparation for this journey. The labor of the writing I have done, without speaking of anything else, has been enough to kill many a man, and has nearly killed me.

Coming up with the sledges, he now lunched on raw frozen venison with the voracious appetite which the cold gale had created; and on finding that *Ar-mou* had harnessed himself beside his four dogs, placed himself at the rear of the sledge, helping it forward by constantly following up and pushing. Holding his head low down, he was sheltered from the sharp wind by the load on the sled. Before midday they were all met by *Ou-e-la* with sick wife (No. 1), coming down the river in haste to be doctored. *Igloos* were built, and twenty-one persons turned in hastily for shelter. The position was found to be lat. 66° 34′ 18″ N., long. 86° 57′ 15″ W. There was no anxiety

for food, as besides their sled-loads several abundant deposits were still near them, and a band of eleven deer made their appearance on the river-bank. The time for sealing also was at hand. Hall's own abstinence and anxieties had made him more than usually susceptible to cold, so that he was not surprised to find his face frequently frost-bitten on this journey of less than three miles. *Tuk-too, Ar-mou's* wife No. 2, drew the frost out by applying the warmth of her hand as often as the bite showed itself Woman-like, she had fallen in the rear of the party, to help him if he should be in need.

Through the next day and the two which followed, all were completely storm-bound within the *igloos*, and both the wife of *Ou-e-la* and Too-koo-li-too's babe, "Little King William," became, as they thought, dangerously ill. Hall treated each case with a dose of phodophyllin and asclepin; and *Ou-e-la*, who had been fearing now a second time the loss of the companion and guide of his travels, was again happy.

While snow-bound, Hall learned from him, among other facts belonging to Arctic animal life, that April is the moon for the birth of the young seal; May for that of the *ook-gook* and the musk-ox; June for the deer and the walrus, and July for the eider-duck. He found also that the Innuits make no attempt to domesticate such animals as the wolf or the deer, from the belief that to do so would bring death to the tribe.* He had a curious account of the hardening process applied to the Kin-na-pa-too dogs, who eat very little, and yet keep in good order and do much service. This is said to be in consequence of

*As exceptions to this in individual cases, the two following stories are found in Hall's notes:

THE TAMED WOLF.

The mother of *Nu-ker-zhoo* once captured a very young wolf, of which she took the greatest care, feeding it with the choicest food she could secure, and sharing with it her bed. She hoped it would become a large and powerful animal, and yet remain tractable and more serviceable

their being fed when young but once a week, being thus kept very poor; when full grown, they endure all manner of hardship and hold their own. The Iwillik people, in hard times, fed their dogs once a week.

While he was busily writing in the hut, happening to have in his hand a long knife, *Ou-e-la* told him that the Neitchille men and Seenee men had many such knives, made out of very long, thick, and

---

than a dog, and would catch deer for her. Unfortunately, when it was half grown, the dogs discovering that their playmate was a different animal and an enemy, pounced upon him and tore him to pieces.

THE BEAR STORY.

[A tradition credited by all the Innuits from above Cumberland Gulf to Hudson's Straits, and from Ig-loo-lik to Chesterfield Inlet.]

Many moons ago, an Innuit woman obtained a polar bear cub but two or three days old. Having long desired just such a pet, she gave it her closest attention, as though it were a son, nursing it, making for it a soft warm bed alongside her own, and talking to it as a mother does to her child. She had no living relative, and she and the bear occupied the *igloo* alone. *Koon-ik-jooa*, as he grew up, proved that the woman had not taught him in vain, for he early began to hunt seals and salmon, bringing them to his mother before eating any himself, and receiving his share from her hands. She always watched from the hill-top for his return, and if she saw that he had been unsuccessful, she begged from her neighbors blubber for his food. She learned how this was from her lookout, for if successful, he came back in the tracks made on going out, but if unsuccessful, always by a different route. Learning to excel the Innuits in hunting, he excited their envy, and, after long years of faithful service, his death was resolved upon. On hearing this, the old woman, overwhelmed with grief, offered to give up her own life if they would but spare him who had so long supported her. Her offer was sternly refused. Upon this, when all his enemies had retired to their *igloos*, the woman had a long talk with her son—now well grown in years—telling him that wicked men were about to kill him, and that the only way to save his life and hers was for him to go off and not return. At the same time she begged him not to go so far that she could not wander off and meet him, and get from him a seal or something else which she might need. The bear, after listening to what she said with tears streaming down her furrowed cheeks, gently placed one huge paw on her head, and then throwing both around her neck, said, "Good mother, *Koon-ik-jooa* will always be on the lookout for you and serve you as best he can." Saying this, he took her advice and departed, almost as much to the grief of the children of the village as to the mother.

Not long after this, being in need of food, she walked out on the sea-ice to see if she could not meet her son, and soon recognized him as one of two bears who were lying down together. He ran to her, and she patted him on the head in her old familiar way, told him her wants, and begged him to hurry away and get something for her. Away ran the bear, and in a few moments the woman looked upon a terrible fight going on between him and his late companion, which, however, to her great relief, was soon ended by her son's dragging a lifeless body to her feet. With her *pau-na* (long knife) she quickly skinned the dead bear, giving her son large slices of the blubber, and telling him that she would soon return for the meat which she could not at first carry to her *igloo*, and when her supply should again fail she would come back for his help. This she continued to do for "a long, long time," the faithful bear always serving her and receiving the same unbroken love of his youth.

heavy ones found he knew not where. In Hall's mind, these heavy ones were, without doubt, obtained from the abandoned ships of Franklin's Expedition; but he shows a free readiness to receive such impressions.

On the 3d, a Record of his work thus far done was deposited at the proposed point, the bearings of which were noted from a native stone monument 5 feet in height, and from the oven built by Dr. Rae, June 23, 1847, for baking with heather the bread described in his Narrative. *Ou-e-la* promised to have care of the cache, and when he should remove to Oog-la-ri-your Island take the Record with him, to secure it from destruction in the summer by any visiting Pelly Bay or Neitchille natives. Parting from Hall next day to go south, he took the friendly word "*Ter-bou-e-tie*" to be passed to the whaling captains when they should arrive. The Innuits, Hall says, never say farewell.

The sledges for North Pole River now went forward loaded with heavy stores, and over all these Hall's cutlass, knife, compass, and medical book. The course was north 50° east. The sled of *Oong-oo-too*, who, with *I-vit-uk*, had now brought two small teams to join the party for a short journey, soon broke down; it was made of poles only, shod as usual with the fine-chopped moss and ice. Its load was placed upon the others and the dogs distributed among their teams A weight of about 500 pounds of whale-blubber and oil in seal-skins was then brought out from a deposit found on the road to *Ou-e-la's* old *igloo*, on arriving at which a comfortable meal was made on *muk-tuk;* the sledges were unloaded and re-iced. After some ineffectual shots fired into a band of twenty frightened deer, the next halt was made, for building *igloos* on the ice of Dr. Rae's Christie Lake, lat. 66° 40′ 45″. The distance made was inconsiderable, but the halt was chiefly for the sake of

the sick child, and the Innuits themselves said that it was their habit to make short days' journeys at the first, extend them from time to time, and make great distances toward the last. For a gain on the morrow, as soon as *Nu-ker-zhoo* had spent his half-hour on his *igloo*, he was sent off five miles up the lake, with a full team, to deposit a sledge load in advance. At 6.30 p. m., a beautiful parhelion appeared 22°.5 north side of the sun; it showed prismatic colors: At $7^{h.}$ $5^{m.}$ the sun was disappearing behind the hills on the west side of the lake. Before the day closed, Hall noted that a rivulet of an eighth of a mile connects the lake with North Pole River, and, uniting two large sheets of water, forms an attractive spot for the deer. Its name is *Koon-woo* (the deer-pass).

At this thirty-second encampment,* to his grievous disappointment, he was detained until the 11th of the month by the continued illness of Too-koo-li-too's child. Concentrated medicine administered for pneumonia did not effect an improvement satisfactory to the mother; and her Innuit friends very readily took occasion to recommend and to practice different forms of their own healing art by *an-koo-ting*. Three somewhat different trials of the art were made. On the 4th, the *an-ge-ko* put a leather strap around Ebierbing's head while lying on the bed, and when he occasionally pulled on this strap, the head came up, or it remained firmly down though the lifts were hard; the raising of the head or its remaining steady indicated the different replies to the questions asked as to the future of the babe. On the 7th, the babe's health not having improved, *Nu-ker-zhoo*, as "a newly-fledged *an-ge-ko*," entered on his work by putting the strap around the head of one of the women, and while propounding many questions to the Spirit,

*For the route now traveled, see map for Chapter XIII: the more successful journey narrated in that chapter being on the same route as far as Cape Weynton.

brought up her head only when an affirmative reply was made. The third operation, on the 8th, is described by Hall as follows:

Nu-ker-zhoo brought into our *igloo* from the land a stone weighing 10 pounds; then he made fast a string of *ook-gook* skin to the stone, and thus he was prepared for his witching work. I got on the bed-platform, a deeply-interested spectator. The persons present were *Nu-ker-zhoo*, *Ar-mou*, *Mam-mark*, myself, Ebierbing, Too-koo-li-too, and their sick babe. Except *Ar-mou*, who stood on the floor, all were seated on the platform. The stone with which *Nu-ker-zhoo* operated, rested on the bed beside him, and the string that encircled the stone was in both his hands, the hand nearest the stone being used as a kind of fulcrum as well as for the lifting-power. It was by his side, and the string passed just above his lap to his right hand. The first proceedings were for *Nu-ker-zhoo*, on having the string in his hand, as above, to woo or call the Spirit to the stone by calling out "*At-tee! At-tee!*" many times; lifting each time on the stone to determine whether the Spirit responded. The others present occasionally joined in the same call. After two or three minutes spent in this way, to the willing eyes of *Nu-ker-zhoo* the stone, despite of all pulls, became almost immovable by the Spirit pulling hard down on it, as the poor devotees to this absurd business believe. This was the indication that the Spirit was willing and ready to answer any question that might be proposed. If the answer was no, the stone had no more than its natural weight; if yes, then *Nu-ker-zhoo* labored hard to raise it the *least bit.*

The object aimed at on each of these occasions was plainly enough indicated by some of the many questions which the Spirit answered. These were, "Should the child take any more of Hall's medicines?" and, more pointedly, "Had Too-koo-li-too conformed to the customs of her people in her habits of daily life, food," &c.; or "on what conditions would the child's life be saved?" The answers to such questions as the two first of these were always strongly in the negative; to the third it was, in substance, that if the mother should, for the space of five months, give up the use of such articles as bread and tea, or remain with *Ou-e-la's* people, the child would live; but if the

parents went forward with it to the Neitchille country, one of the three would die.

So strong had been the persuasions of the women of the party, and so fully under the power of their people's law were even Ebierbing and Too-koo-li-too (although they had lived with Hall both in their own country and in the United States), that during this temporary failure of the power of his medicines, these parents gave themselves fully up to this superstition. His notes show how sincerely grieved he was at the risk to which this giving up of medicine was subjecting the child; how tried in spirit he was at their degrading subjection, and yet how helpless he was to afford relief. Too-koo-li-too, when almost persuaded to let the child again have relief, pleaded that she and her husband would be *cursed* by the Innuits; and told Hall plainly that if the *an-ge-ko* were not obeyed they would all desert him. The whole of this matter was still the more trying, because, although there were some singular phenomena for which Hall says he could no more account than for like things in the spirit-rappings in his own country, the actions of the *an-ge-ko* could generally as plainly be seen through as was his object; for on closely watching him, as in the process of the stone-lifting, Hall saw well enough that when the weight was about to be lifted with great difficulty *Nu-ker-zhoo* prepared himself beforehand for a strong pull, and as plainly did the opposite when it suited his purpose. "What was all this lifting for? To gratify the devil, who has been doing his evil work through the dark benighted minds of this truly savage people." Hall told Too-koo-li-too and Ebierbing that they must not mind the information pretended to be got out of a stone, and confidentially showed them the deception that *Nu-ker-zhoo* had practiced in lifting it and in the former lifts of the

heads, notwithstanding which Ebierbing rewarded the *an-ge-ko* by getting for him one of Hall's hand-saws and presenting him with his own gun.

On the 15th the sledge parties arrived at the place marked on the map to be found in Chapter XIII, "Encampment 33" The mother of the sick babe, "Little King William," had now been persuaded to permit the further "exhibiting" of medicines, and to trust Hall's judgment that the child would be in as fair way of recovery if borne in her hood on the sled as if kept in the snow house. The heavier loads being again pushed forward, the parties in charge made their next deposit on the crown of the land a little beyond the end of Christie Lake, and halted here, not knowing the route further toward Ak-koo-lee—Committee Bay. *Mam-mark* was looked to for their guide when they should resume their journey, as she alone knew the northern route. Hall believed that the point reached was the "Flett" land of Dr. Rae; and from this point, if *Mam-mark's* guidance failed, he could go forward safely by the aid of Rae's chart. At the Lower Narrows many deer had been seen, the spot being a famous one for the number of these animals, which, while crossing in their season from one sheet of water to the other, are speared by the Innuits from their *ki-as.*

In letters written to Mr. Grinnell, Mr. Brevoort, and Captains Chapel, Kilmer, and White, Hall stated with care the places of his record-deposits, and what disposition he desired should be made of them if looked for; adding that he must be absent from Repulse Bay till the following spring, and perhaps for another year. The records of his work at Repulse Bay would be found, as heretofore named, at the base of Beacon Hill; those which he hoped to make on King

William's Land would be at the points used by Lieutenant McClintock in the expedition of the Fox; in general, they would be found at the end of a line 25 feet north from stone monuments which he would build. *Oong-oo-too*, who was now about to return to Repulse Bay, had special instructions to *Ou-e-la* to deliver these letters to any whaleships which should come in; and he, as well as *I-vit-uk*, were rewarded for their past services with all the tobacco which could be gathered from Hall's, *Nu-ker-zhoo's*, *Ar-mou's*, and Ebierbing's pockets.

On the withdrawal of their teams, Hall was gratified to find that he still had three strong sledges and a team of eighteen dogs including two powerful old ones; which would be enough for even the three usual daily trips—the advance, with its return, and the forward journey. Making an early start, with the wind and temperature in their favor, after a fair new advance, they made their usual repast on frozen venison, slaking their thirst through a hole chiseled 6 feet into the ice, over which the snow lay 18 inches deep. Having here an ascent to overcome, "man-lines" were prepared from *ook-gook* skin for harnessing helpers to the dogs; these were made fast to one of the sledge cross-bars, and as near the stern as possible, and were long enough to harness a man on each side of the head of the sled. Both *Mam-mark* and *Nu-ker-zhoo* having forgotten at this point the northern route taken by them twelve years before, Hall chose the left of two routes opening toward Pelly Bay, believing that this was Dr. Rae's route. On the 13th, kept within their huts by a gale, the day was spent by the In-Innuits feasting and playing dominoes; in the evening Hall had renewed conversations with *Nu-ker-zhoo* and his wife about Franklin's Expedition.

Delays increased. But little disposition was now found among the Innuits, or even in Ebierbing, to push on to King William's Land.

They feared that they would find no reindeer there, and that if they reached the place they would be compelled to return to Pelly Bay for the winter. Hall encouraged them to believe that they would be among a number of natives, and would find sufficient provision; but as no one of them could appreciate his chief object, he could gain upon them only by alternately showing determined resolve and next persuasion—the latter was of necessity the usual course. He resolved on spending as little time as possible in making astronomical observations or in writing. His notes of the day contain the expression of a purpose, that if even all the Innuits deserted him, he would go on with a sledge-team by himself; for he never could return to his country without accomplishing something of the objects for which he had left his home. It may be remarked, in passing, that the sincerity of this record is confirmed by the fact that he not only might have returned in one of the whalers during the previous summer, but that he had been apprised by his friend Mr. Grinnell of the willingness of Captain Chapel now to look him up in Repulse Bay and bring him back.

On the 14th he could easily have made ten miles had *Nu-ker-zhoo* and Ebierbing been any other than Innuits. In the night, however, these friends proved their value in another way—by saving the dogs, his northern camels. Plunging, though unarmed with even a knife, into a pack of twenty-five devouring wolves, they frightened them off by shouts; more than once the furious animals formed in line for a new attack. Delayed until 10 a. m. of the following morning by this night-watch against the wolves and by *Nu-ker-zhoo's* renewing his *an-koo-ting* for Little King William, the sledges at last started forward, and made better progress through the day, although the wind freshened to a gale from the north, and the run was made more difficult

by the recent fall of snow. At times, the teams were doubled up to ascend the hill, the change requiring but half a minute. When one of the drivers was found nearly exhausted by his peculiar Innuit urging of his dogs, Hall drove his team and gave him a small swig of Bourbon; and by extending the gift later in the day to the other men, gained their willing travel of an additional hour. While passing over one of the lakes, *She-nuk-shoo* picked up a mass of reindeer-hair with a piece of the skin having fresh blood on it—a mark of the work of some of the very numerous wolves, whose tracks were all along the route. The thirty-fourth encampment was made at 4.47 p. m., the wind blowing a gale and the snow flying thickly. While they were building *igloos*, Hall himself succeeded in chiseling in thirty-five minutes through ice 6 feet thick, and in one hour slaked his great thirst with "four quarts of glorious water." On their way they had passed the grave of the unfortunate *Ar-too-a*, who, as has been before noted, had been drowned in the lake the preceding summer. The course during the day had been north 53° east, and the rate of travel had averaged two and a half miles an hour. Where they halted, a great number of Innuit stone-marks were found, set up to direct the bands of migrating deer across a narrow channel of the lake passed over. At night another furious wolf-attack was repelled.

A new and tedious delay began on the 15th. The mother of the sick child, alarmed by its much-changed looks, again summoned her friends, and *Nu-ker-zhoo* renewed his *an-koo-ting*, beginning this time by a solemn march with Ebierbing's double-barreled gun in hand, and uttering for some fifteen minutes along the passage-way the most vociferous cries. Within the *igloo*, on the full renewal of the stone-lifting feat, the replies of the Spirit through the *an-ge-ko* to the dis-

tressed mother were positive that the child would live; and her belief in this was confirmed by its temporary revival from what had seemed to Hall when he looked on it in her hood, to be the presence of actual death. The confidence of the parents in his judgment, he thought, however, was weakened by their remembering his having given them hope of the life of their child *Too-ke-li-ke-ta* (the Butterfly) not long before it died in New York in 1863. The *an-ge-ko* renewed his positive assurances by the answers from the lifted head of the girl, *Took-too*, after he had completed his work with the stone. Two days after, the mother, in her despair and professed willingness to do anything to save life, proposed to fall in with the custom practiced by her own people of Cumberland Inlet, which is, in such cases of extremity, *to save life by giving away the child to another person*. Her own immediate connections on the inlet had been unfortunate in the loss of their children, but she remembered and related several cases in which, as her people thought, health had been in this way certainly restored. Whether it was by request or not does not appear, but *Nu-ker-zhoo's* wife came to the *igloo* the same evening, and was witness to the clear answers through the again lifted head of *Took-too* that the babe must be given away the next morning. Too-koo-li-too had taken full share in the feat of the evening, contributing a peculiar wood-button to the *an-ge-ko*, who threw it rapidly down, first on one side and then on the other of *Took-too's* head, dashing it finally against the *igloo* wall; and she gave up the babe the next morning to the woman who had consented to receive it from her before the *an-koo-ting* began; but, a day or two after, on Hall's telling *Nu-ker-zhoo* boldly and with fire in his words that the child must go back, another *an-koo-ting* restored it. The mother had suffered, too, for want of her babe at the breast, and the

child had no nourishment except a piece of raw meat to suck. With but one exception, however, entreaties to resume the administering of medicine were refused up to the day of its release from its sufferings.

On the morning of the 16th, Ebierbing and Hall climbed a hill 300 feet above the lake, but were shut out from any clear sight of the sea to the north by the thickly-flying snow; they thought that through the spy-glass they could obscurely make out sea-ice. All along their route, tracks of the musk-ox were now plainly recognized by their stand-droppings, so much larger than those of the deer; reindeer were seen, but the travelers had no weapons with them but long knives. The view from the hill took in lakelets in every direction; the one on which they were encamped, was three-fourths of a mile in length, with an arm on the other side of the hill that seemed to extend itself to the sea; while the number of the lakes made it more difficult than ever to determine whether they were really upon Dr. Rae's old route. Hall thought that a dozen different routes might be followed from Christie Lake to the Sea of Ak-koo-lee.

On his return from the hill, he found that a puppy had capsized his artificial horizon, spilling all the mercury, and *Mam-mark* had not much improved the matter by gathering it from the snow into a tin dish. Provoking as this was, he had to make the best of it, as a few days before he had done when the dogs fell to fighting while he was taking his meridian observations—the dogs, in the muss, knocking the horizon over and over. Such annoyances and worse ones, not unfrequently occurring, he wished all the dogs in "Tophet"; yet he writes, they "are a blessing to an Arctic traveler. I hope some day to have their aid in getting to the North Pole."

On the 17th, another day was forced from him for rest by the

Innuits. Eighteen days had now passed without making an advance of more than thirty-two miles to his present position, lat. 67° 4′ N.; but such delays as had been necessary on the score of humanity were not regretted. During this day, Ebierbing, who had seen Hall's tooth-pullers and heard him describe lancing the gums, drew out one of his own three-pronged molars, bleeding himself profusely by his four trials. On Hall's looking over his instruments, and taking out with them a couple of combination knife-fork-and-spoon articles, *Mam-mark* who saw them, told him that she had seen among the Innuits at Pelly Bay many forks, all of the same silver-like look, as well as many watches and chains.

The day following, all the men, women, and children were breakfasted on bread and coffee; they once more made a start, the travel averaging two miles per hour, and by four o'clock, with difficulty, arrived at a place within two miles of the sea. While going down the hill to Salt Lake, the descent being at an angle of about 45°, and the loads heavy, all the dogs were detached and the sledges let go on their own hook. A little further on, Hall's sledge fell behind, the runners dragging heavily. In order to renew the shoeing, his driver and himself filled their mouths with snow-water, which would again freeze while they were putting it on; but *She-nuk-shoo* grunting out that he would lose his mouthful if even he cried out to the dogs to stop, they capsized the sledge to stop them. Five minutes later they were gliding over the snow as if over glass. A different kind of grunting, *took-too*-like, made by *Nu-ker-zhoo*, kept a band of deer following the sledge so closely for more than two miles that their eyes were plainly seen when they stopped to stare. He kept up with Hall, yet took time to make several shots, and killed a fine buck.

By the 19th of the month, Hall had struck the rough ice of the sea of Ak-koo-lee, and, passing over one of its small arms, made his encampment upon it. On the 20th, he measured a rough lunar distance to test the correctness of his dates, and confirmed them by comparison of this measurement with those given in the Nautical Almanac; he was unable to make any further advance on this day. The first headland met on resuming the journey on the 21st was a projecting point 100 feet in height. On the 22d, by meridian observations, he determined his latitude, and by comparison of four chronometers found his longitude to agree within 11′ of that given on Dr. Rae's chart; the latitude agreed very well for the relative situations of Cape Lady Pelly and Point Hargrave. Making an effort to push his advance parties forward by longer journeys, of at least 25 miles per day, by saving the time usually spent in loading up and in building *igloos*, on the 23d he reached Cape Lady Pelly, and halted to discover how he might get round the point, as the ice was exceedingly rough. "Jagged and broken granite stones are in plenty here, where I suppose Dr. Rae made his advance deposits in 1854."

The land a little further on was found to be very low, forming an inclined plane to the coast, interrupted by a short highland one mile distant from and parallel with it. As far as to Point Swanton, the coast-line was afterward found so low that it was difficult to tell whether they were on sea-ice or land; the travel was upon the ice-foot, which was from 10 to 30 yards wide, on the outside of which were heavy masses of very rough ice from 50 to 200 yards in width, while the sea itself was covered with solid pack-ice. On the 24th two deer, shot by Ebierbing and *Ar-mou* with Hall's favorite rifle, were added to the loads on the sleds. The older one had antlers 18 inches long, which,

being a female, she had not shed. She was found with young the size of a rabbit; this the Innuits forbade to be taken from her. Partridges white as snow, rabbits, and a number of snow-birds were seen. On the 25th they halted on the ice, in three *igloos*, and Hall congratulated himself that he had that day advanced the whole company and stores 17 miles; to accomplish which, however, he had made 60 miles, taking in all the advance and return trips necessary for forwarding the stores.

But the next two days were again lost. The Innuits pleaded that they must go on a musk-ox hunt, and on Hall's consenting to this for one day, they next pleaded that the first day of halt must be one of rest. On the day following, they failed in their hunt, and would not turn aside to secure the deer which were close by. Hall, not willing to be unoccupied, made a side journey to bring up his deposits; but he was obliged to take the reins into his own hands from the impetuosity of his young driver, *She-nuk-shoo*, who had whipped the dogs so incessantly as to keep them jumping over one another, so that in five minutes the lines became woven and interwoven up to the heels of the hindmost dogs—a very unusual occurrence. With much less whipping, Hall secured as fair speed. On the next day he worked up his observations and obtained from his men the promise of greater haste. *Nu-ker-zhoo* told him they ought to reach Pelly Bay, still 80 miles distant, in three days.

On the 27th, the fresh provisions being nearly exhausted, the whole party breakfasted on coffee and pemmican; at a late hour, only a load of stores was pushed forward by Ebierbing and *Nu-ker-zhoo*. Returning at 10.30 p. m., Ebierbing reported that these had been deposited at a point which, as well as he could make it out by Dr. Rae's chart, was close by Cape Weynton, on the south side of Colvile

Bay. Hall was here forced to remember that Dr. Rae in 1854 had made the same journey from Fort Hope in five days, his party dragging their own provisions without even the aid of a dog. It had now cost himself twenty-eight days with the help of his teams. All the Innuits believed, however, that Rae must have found the ice on the sea of Ak-koo-lee much smoother, or it would have been impossible for him to travel so far out from the coast-line.

The dogs not having been fed for five days, a 40-pound piece of whale-beef was now cut up and *buttered* for them with *ook-gook* blubber and seal-oil. They were then put in one by one into an abandoned *igloo*, while *Mammark* stood inside, club in hand, to beat off all but the one to be fed, and to pound him out when Hall had fed him. A short time before, *Ar-mou* had nearly killed one of his best dogs by throwing a hatchet at him for stealing, and to recover this hatchet which had been left behind, and a wood-button used by the *an-ge-ko*, had cost Hall some of the provoking delays of the journey.

On the 28th no advance was made. The march would have been resumed northward and westward despite of a severe gale, but Too-koo-li-too was entirely broken down by the continued watching of her child. After a serious talk with both parents, they once more permitted it to take medicine while in an epileptic fit—"two drops of viratum viride and one-half grain of asclepin." The day following, the wind being fresh from north-northwest and the temperature 40° below freezing-point, three miles per hour (two and a half on direct course) were made within the hours from 9.40 a. m. to 6.20 p. m., two stoppages being needed to disentangle the dog-lines. Two small streams were passed, which emptied into the sea of Ak-koo-lee. The travel was mostly on the coast-line ice, the coast itself and the hilly

land running parallel with it being a plain lowland of from half a a mile to one mile in width. Cape Weynton was soon on their larboard beam, bearing due west, and distant half a mile. The cape is not more than 50 feet in height.

A new era in the history of this sledge journey now opened. Ascending a berg 30 feet above the level of a floe to prospect the best route across Colvile Bay, Hall, with *Ar-mou* and *She-nuk-shoo*, caught sight of four strange Innuits who appeared to be sealing some three miles to the northeast. The sight occasioned some excitement, for, while there was every reason to establish friendly intercourse with these men, in order to obtain further information bearing upon the main objects of his expedition, Hall had his apprehension that if these should prove to be See-neem-e-utes, he would need to be cautious in every movement. He quickly unloaded one sledge and sent it back, with all the dogs, to hasten up the rest of his party; they arrived at 2 p. m. But *Nu-ker-zhoo*, watching with a spy-glass the movements of these strange Innuits, felt sure that he recognized old friends. Hall's party going forward, therefore, arrived at 9.50 p. m. (sunset), at the snow village of the strangers, and made their fortieth encampment alongside of them on the ice of the sea, three miles from the coast and near Cape Beaufort. The next morning, no sooner was Hall's *igloo* unsealed than it was filled with new faces.

Kok-lee-arng-nŭn, their head man, showed two spoons which had been given to him by *Ag-loo-ka* (Crozier), one of them having the initials F. R. M. C. stamped upon it. His wife, *Koo-narng*, had a silver watch-case. This opened up the way for immediate inquiries. Through Too-koo-li-too who as usual soon proved a good intrepreter, it was learned that these Innuits had been at one time on board of the ships of *Too-loo-ark*,

(the great *Esh-e-mut-ta*, Sir John Franklin), and had their *tupiks* on the ice alongside of him during the spring and summer. They spoke of one ship not far from Ook-kee-bee-jee-lua (Pelly Bay), and two to the westward of Neit-tee-lik, near Ook-goo-lik. *Kok-lee-arng-nŭn* was "a big boy when very many men from the ships hunted *took-too.* They had guns, and knives with long handles, and some of their party hunted the *took-too* on the ice; killing so many that they made a line across the whole bay of Ook-goo-lik." The Pelly Bay men described the *Esh-e-mut-ta* as an old man with broad shoulders, thick and heavier set than Hall, with gray hair, full face, and bald head. He was always wearing something over his eyes (spectacles, as Too-koo-li-too interpreted it), was quite lame, and appeared sick when they last saw him. He was very kind to the Innuits;—always wanting them to eat something. *Ag-loo-ka* (Crozier) and another man would go and do everything that *Too-loo-ark* told them, just like boys; he was a very cheerful man, always laughing; everybody liked him—all the *kob-lu-nas* and all the Innuits. *Kok-lee-arng-nŭn* showed how *Too-loo-ark* and *Ag-loo-ka* used to meet him. They would take hold of his hand, giving it a few warm and friendly shakes, and *Too-loo-ark* would say, "*Ma-my-too-mig-tey-ma.*" *Ag-loo-ka's* hand-shaking was short and jerky, and he would only say, "*Man-nig-too-mé.*" "After the first summer and first winter, they saw no more of *Too-loo-ark;* then *Ag-loo-ka* (Crozier) was the *Esh-e-mut-ta.*"

The old man and his wife agreed in saying that the ship on board of which they had often seen *Too-loo-ark* was overwhelmed with heavy ice in the spring of the year. While the ice was slowly crushing it, the men all worked for their lives in getting out provisions; but, before they could save much, the ice turned the vessel down on its side, crushing the masts and breaking a hole in her bottom and so over-

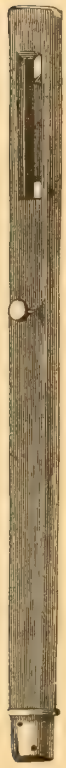
whelming her that she sank at once, and had never been seen again. Several men at work in her could not get out in time, and were carried down with her and drowned. "On this account *Ag-loo-ka's* company had died of starvation, for they had not time to get the provisions out of her." *Ag-loo-ka* and one other white man—the latter called "*Nar-tar*," a *pee-ee-tŭ* (steward)—started and went toward Oot-koo-ish-ee-lee (Great Fish or Back's River), saying they were going there on their way home. That was the last they saw of them, but heard of them some time after from a Kin-na-pa-too, who said he and his people heard shots or reports of guns of strangers somewhere near Chesterfield Inlet. On getting the Innuits to try to pronounce the word "doctor," they invariably said "*nar-tar*." This made Hall think that the white man with *Ag-loo-ka* was some one called "doctor"—perhaps Surgeon Macdonald, of Franklin's ship, the Erebus.

The other ship spoken of as seen near Ook-goo-lik was in complete order, having three masts and four boats hanging at the davits—whale-ship like. For a long time the Innuits feared to go on board; but on the report by one of them that he had seen one man on the vessel alive, many of the natives visited it, but saw nothing of the man. They then rummaged everywhere, taking for themselves what they wanted, and throwing overboard guns, powder, ball, and shot.

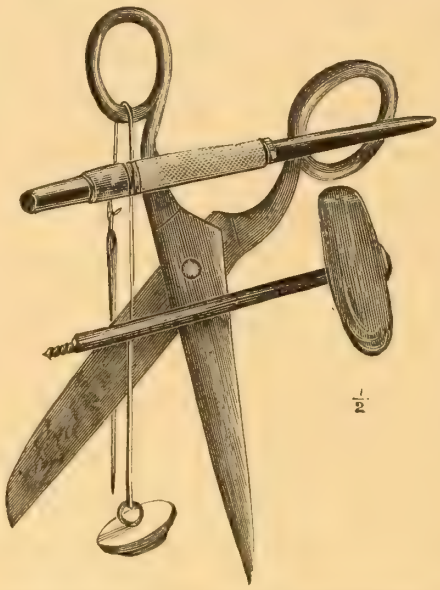
At an interview with the mother of *Too-shoo-art-thar-iu* whose son saw *Ag-loo-ka* (Crozier) on the island of Ook-goo-lik, Hall was told that during the previous summer or winter, the Innuits of Ook-goo-lik had found two boats with dead *kob-lu-nas* in them—the boats on sledges; and that *In-nook-poozh-e-jook* had one of them.

The several interviews from which the accounts here given have been collated were deeply interesting to Hall. They were held in the

presence of his two steadfast friends as interpreters, and of other Innuits, and the news was communicated with apparent truthfulness. He says of the chief that he seemed an honest old fellow, delighted with his new *kob-lu-na* friend, and frequently and cordially calling out to him, "*Man-nig-too-me.*"* The Franklin relics obtained from him included a mahogany barometer-case, spoons, forks, and a number of other small articles.†



BAROMETER-CASE (FRANKLIN RELIC).



FRANKLIN RELICS WITH HALL'S PENHOLDER.

But other news received from these strangers was anything but gratifying. It effectually barred further progress to King William's Land for the year 1866. The first words to *Nu-ker-zhoo*, *Mammark*, and *Ar-mou* told the loss of their friends and relatives some years before by starvation, murder, and cannibalism. This was followed by such accounts of the dangers awaiting them if they went on to Pelly Bay and Ook-goo-lik, as to throw a damper on the whole party except Hall himself. The old chief said that a very old and infirm man on removing to Ook-goo-lik had been immediately murdered with his whole family; that very recently there had been fights among the Neit-tee-lik Innuits for a woman, and one of them had been

*The meaning of this word is not given by Hall; nor is that of Ma-my-too-mig-tey-ma (p. 256.)

†Afterward donated by Hall to the Smithsonian Institution, and in 1876 placed for the United States Naval Observatory in their Arctic exhibit in the Government building at the Centennial Exhibition, Philadelphia.

killed to get his wife; that some of the Pelly Bay natives who were without wives, and who were being aided by the friends in their attempts to steal wives from their husbands, would certainly carry off *Mam-mark*; and that he himself was leaving his own country for Repulse Bay through fear especially of the See-nee-mee-utes. He added that he had given this information chiefly because of his friendship in past times for the parents of *Ou-e-la*, *Nu-ker-zhoo*, and others, and his promise to keep a good look out for any of their children, if he should ever find them anywhere near the See-nee-me-utes. Three men of *Kok-lee-arng-nŭn's* party, one by one confirmed all that their chief had said of the bad state of affairs among the natives northward and westward, and added that since a recent fight about a deposit, in which the See-nee-mee-utes had lost two men by the Neit-tee-liks, they were burning to wreak vengeance on somebody.

SILVER FORK AND SPOONS (FRANKLIN RELICS).

Two of these Pelly Bay men told of their own visit, two years before, to Ki-ki-tung (King William's Land), on which they had remained a short time. They pointed out on Rae's chart exactly the course they took in going and returning direct from the upper part of Pelly Bay overland to Spence Bay, and thence across the ice to Ki-ki-tung, passing the south point of Matty Island, and thence northwest;—for sealing. When Hall questioned these two men as to any ships

having been seen on the north or west of Ki-ki-tung, they pointed again on Rae's chart to Cape Victoria, and said that, a few years before, many Innuits had seen a ship near there from which *kob-lu-nas* and sledges had come down from the south.

This information was again interesting, but its communication was soon followed by some acts of the new-comers themselves toward Hall's people, which not only decided but hastened his setting out on the return for Repulse Bay. They seemed to have easily intimidated Ebierbing, *Nu-ker-zhoo*, and others; getting from them some of their best dogs, weapons, and tools, and, a day or two after, inviting them to plays—boxing, wrestling, and knife-testing—an invitation from which Hall dissuaded them at the advice of Too-koo-li-too, who said there was danger of fighting and murder. She had been made aware of their custom of introducing a short, sharp-pointed bone inside of their mittens, so that, when boxing with these, they may strike a Repulse Bay native, if possible, on the side of the head near the eye;—*a deathblow struck in play.* They then proceeded to carry out a grand *an-koot-ing*, in the course of which their *an-ge-ko* gave a reply from the Spirit that Too-koo-li-too's sick babe should be given to them: a *ruse*, as Hall notes, to obtain further gifts. He came unwillingly to the conclusion that his own party lacked the nerve needed for any risk which might occur in going forward, although *Nu-ker-zhoo* had for himself protested that he was not afraid. With a sad heart, "disappointed but not discouraged," he prepared for his return; yet making the resolve that he would endeavor, in the following year, to organize a party of four or five white men, with whom, together with *Ar-mou*, *Nu-ker-zhoo*, and Ebierbing, he would again come over this route and reach King William's Land. For that journey he would

now make a deposit of expedition stores at Cape Weynton. His notes of this day contain these words: "Thanks be to God, I have yet the heart to persevere in what I have taken upon myself to do: to reach King William's Land, and there finish the mission that I am on. Obstacle after obstacle has yet to be overcome before I shall triumph, but by the aid of High Heaven I will yet succeed."

The RETURN JOURNEY could be expected to bring but little of special interest or of an experience differing from that so recently passed through; the route followed, as will appear by the map (Chapter XIII), was nearly the same; the Pelly Bay men traveled in Hall's company until the 19th of the month, and then fell back to repair damages to their sleds. On the 5th, both companies made their start for Repulse Bay, presenting a singular and grotesque appearance with all their sledges, teams of dogs, men, women, and children; the latter, of all ages and sizes, from infants in hoods to half-grown boys and girls. The sledge now driven by *Nu-ker-zhoo* was a relic of Sir John Ross's vessel, the Victory; the runners, about 12 feet in length, being made of a part of one of her masts which had been found, many years, ago in the ice near the entrance to Pelly Bay.

The day following, the stores for the next proposed journey to King William's Land were deposited in two places close to Cape Weynton, the second deposit being that of a large trunk at a point near a cache once made by Dr. Rae; an accurate list of all these stores appears in the notes. A tent given to Hall by Captain Kilmer of the Black Eagle, was spread over the articles, and then ponderous stones were piled above, and the bearings of the two deposits from prominent neighboring points carefully recorded. While making these caches,

a water sky was clearly seen by all the company underneath the dark nimbus clouds, East Northeast.

The traveling on the 7th was under the disadvantage of a snow-squall, which overtook them at noon. The lead was taken by the Pelly Bay natives. As soon as Hall came up with old *Kok-lee-arng-nŭn* (a cripple), he took him and Too-koo-li-too on his own sledge, and walked by their side. Too-koo-li-too had with her as gifts from the strange natives, two pairs of scissors, a cap-box, and some shot that came from Ross's Victory, done up in the skin of a deer's heart. The distance made before 2.15 p. m. was almost the same with that of the 30th of April on going up. A prominent group of hills, called Kig-loo-a-te, was seen bearing south 72° west from the forty-third encampment, and other high land called Shoung-noo-gua to the northwest; a ravine divides the two. The high land extends back nearly a mile from the low coast The temperature was now much higher; the thermometer, hanging on the shady side of the sledge and affected by reflection, read 36°. All day, the snow was deep and soft, and the ice completely worn off from the shoeing of the sledges, so that scarcely two miles an hour on the average could be made.

The coast-line was more closely followed on the travel of the 8th and 9th, and was found to be very irregular and generally low. At one point a ridge composed of sand, clay, and shingle only 4½ feet in height looked to those traveling on the sea-ice "like a considerable mount." From Cape Weynton to Cape Lady Pelly, this low land, mostly consisting of frozen mud, was without snow, and appeared to have been so through the winter; some patches having thawed, forming soft mud. In the frozen mud were many fossils, of which *Ar-mou* brought in from his *took-too* hunt a fine lot, and the wife of the

old chief emptied out on the sled a number from her full mittens; Hall had instructed all the Innuits to bring to him all curious-looking things whenever they saw them.

Little provision remained on hand. He gave out his unpalatable damaged Marshall sausage-meat for breakfast, and, while he ate of the same food, he was glad to find that his plan succeeded, for a couple of the unwilling Innuits now promptly started off for *took-too*. He gives a racy account of the taking of some *six-ics* (marmots). Ebierbing, while the Pelly Bay Innuits intensely watched him, three times in succession missed the little animal, though using Hall's best rifle. The creature sat by his hole without fright all the time, except at the first shot when it went into his hole, but was quickly out again. At another hunt, *Nu-ker-zhoo*, Ebierbing, and *Ar-mou* were all out with rifles; but, after their firing three shots, *six-y* darted into his hole and was instantly out again; one minute later, another shot, and *six-y* was again out, as if saying "Kill me, if you can." The Pelly Bay natives laughed at the weapons used; for with a simple string having a slip-noose—sometimes made of the end of a whip-lash—they readily caught a number of these little animals, one of which made a good meal for a man. *See-pung-er*, one of the Pelly Bay men, came in at midday on the 9th, and, sticking his thumb and fingers straight out, showed his answer to the question how many he had killed and the bites he had received. The wife of *Kok-lee-arng-năn* also showed three *six-ies* slung on her back; she had caught them by a "slip-a-noose" at their holes. But the stock of provisions was still short; the company at times could take but one meal a day, with the addition of a small bit of whale-beef, the dog-food. A crow which had come very close to the traveling party escaped both the dogs and

rifle-shots. An owl had the same happy deliverance, but a few partridges were secured. At night in the *kom-mong*—pemmican-soup, with Borden biscuit, refreshed all except Too-koo-li-too, who, on account of her sick child, was allowed by her superstitious friends to eat bread only.

On the two days that followed, success in the deer-hunt re-supplied the company with fresh meat, and the dogs received something, although but little and that of "not much more account than sawdust-pudding"; the supply for seventeen animals being only two deer-paunches. But they had stolen seal-blubber and whale-meat from the sledges while they were loading up, in spite of unmerciful poundings with big sticks and clubs.

On the 11th, when the party came near Rae's "Point Hargrave," Hall left the sledges, and ascending the point, found its height to be about 75 feet above the level of the sea, and that it was a hill of rock (granite and gneiss, as Rae has recorded it), having on its eastern side a small inclined plane leading from the coast up to a gap on the ridge. From the top of the hill, Cape Lady Pelly and the land on the east side of the sea of Ak-koo-lee were plainly visible. At 7.15 p. m., having made scarcely more than a mile an hour on a course south-west from this point, he rested for the night, making his forty-fifth encampment on a sand-plain covered with very dirty snow. The afternoon route had been one of perplexing difficulties in making any headway with the loaded sledges, but the discovery of clay and sand hills of a most interesting character, containing stores of valuable fossils of innumerable kinds, well repaid him for the outlay of human and dog muscle that had been expended in getting through the labyrinth of this "mud and fossil city," as he hastily called the place. On getting

through these fossil hills and returning to his *igloo*, he found that *Nu-ker-zhoo* had put within it all the deer he had killed; a most kindly act, done without even a hint. It was another gratification to learn that his own black dog had added eight pups to their live stock.

On the 13th, the long-expected death of Too-koo-li-too's child, Little King William, took place. The almost distracted mother, the moment she found that it was really dead, rushed out of the *igloo*, pressing the dead baby to her bosom and pouring out her soul's deep grief. Her leaving the *igloo* so quickly was in accordance with Innuit custom; for if this is not done when any one dies in it, everything within becomes worthless. In this case it was considered that the mother went out soon enough, so that the bedding and everything else need not be thrown away. In ten minutes she returned and took her seat on the bed-platform, grieving for a very long time as a loving mother only grieves. At length she was persuaded by *Mam-mark* to let the dead babe be taken from her bosom and wrapped in a small furred *took-too* skin. *Mam-mark* insisted that, according to the custom of her people, the remains must be buried at once; but, on Hall's remonstrating and urging that they should be kept till at least the next day, a compromise was made, and the child that died at 25 minutes past 1 p. m. was buried at 6.30. The remains had been dressed in a suit of young *took-too* furs, made by the mother the winter before They were now wrapped in a blanket of *took-too* skin of long fur, tied with thongs, and having a loop in it to go over the neck of the mother, who must carry the corpse. A hole having been cut through the wall of the *igloo* for the procession of four persons in single file, Hall, *Mam-mark*, the bereft mother with the babe suspended from her neck, and the father following close, proceeded to the place

of burial on a little hill, which Hall had selected. Before the remains were laid in the grave, he wrote out the following record:

> These are the mortal remains of Little King William, the only child of Ebierbing and Too-koo-li-too, the interpreters of the last Franklin Research Expedition. Deposited here May 13, 1866, the day of its death. God hath its soul now and will keep it from all harm.—C. F. HALL, *May* 14, 1866.

This he placed within the fur cap covering the head of the child, and returning next day to the grave, he erected near it a monument of five stones, three at the base—typical of Faith, Hope, and Charity—and on these the two others, forming the figure of a cross

At the burial, though it was blowing a gale and a snow-drift was flying, the mother could not be prevailed upon to wear her double jacket to protect herself from the storm. "She must needs comply with custom." Under the same influence, she had already borne for some days the inconvenience of wet feet; neither could her wet stockings be dried, nor the rips in her boots repaired. It was little comfort to her, a few days after, to be told by *Mam-mark* and *Nu-ker-zhoo* that the child would have lived, as the "Spirit" had said to the *an-ge-ko*, if she had not consented, by Hall's advice, to receive it back from *Nu-ker-zhoo's* wife, or if she had not departed from the customs of the Innuits in the matter of her daily living. She renewed her subjection to the customs of the people, and received their instructions, that for one year her husband and herself must be very careful what they should eat, and that the same be not raw; and her husband began his compliance with such instructions by pleading the death of his child as forbidding him to carry on his usual daily duties even in the matter of preparing the ammunition necessary for the hunt. Hall says here that probably none of the Eskimo tribes are cursed with so many ridiculous customs as the Repulse Bay and Ig-loo-lik people.

The 17th was a very warm day, the thermometer reaching 38°, although no sun appeared; the upper walls of the *kom-mongs* fell in, and made necessary the erection of tent-coverings overhead. The day following, the snow melting as it fell, prevented the party from resuming their return journey. The shoeing of the sledges also was found entirely thawed off during the night. In the morning Hall found that one of his pups had been suffocated by its mother lying upon it, and that, failing to lick it into life, she had eaten it for her breakfast. On the 19th, he found she had repeated the act, a few bloody spots only remaining to tell the tale This left him but five of the litter, the birth of which had given him hope of efficient aid on his next journey. He had to handle this mother black dog and her pups himself, as the Innuits, through some superstitious notions, were unwilling to feed or to harness them.

At 8 15 p. m. of this day the party began a further advance, preferring to travel at night, and averaging two and a half miles per hour, until twenty minutes past midnight. On leaving the small lake on which they had made their thirty-fifth encampment, April 19, deviating now from the route of that date, they crossed a bluff the descent of which being very abrupt was swiftly made by the loaded sledges themselves, when the teams, which had been doubled up for the ascent, were successfully detached. On the 21st, the party got back as far as the Lower Narrows, heretofore noticed as a deer-crossing, and on the 22d, they made the forty-ninth encampment on the same spot between Christie and North Pole Lake which they had occupied on the 5th of April. At this place *See-pung-er* arrived, to the surprise of all, with his family. He had been working hard to rejoin the party since being separated from them at the forty-sixth

encampment. His sled was found to be very heavily loaded; for, besides his household goods, it had on it two cumbrous *ki-a* frames, one of which was made entirely from a boat of the Franklin Expedition, and the sledge itself from a mast of Captain Ross's "Victory." In the midst of a howling storm, he was promptly supplied with an armful of *took-too* meat. The next day, in company with *Nuker-zhoo* and his family, he again left Hall for a time.

On the 23d, the journey down the North Pole Lake was made swiftly by the use of a tent for a sail to the sledges, assisting the poor hungry dogs; the sled itself sometimes getting in advance of them. Ebierbing and *She-nuk-shoo* traveled beside the sledge to guide it. During the evening, from three and a half to four miles an hour were made by sail only, and at fifteen minutes past 8 a. m. of the 24th, Hall revisited his boat Sylvia and his stores deposited at the base of Beacon Hill, March 31st, and to the record he had then placed on the Sylvia on leaving this point, he now added an inscription summing up the obstacles met with on the journey and his plans for renewing it. He had the satisfaction to find that *Ou-e-la* had been faithful to his promise of that date, to take from the hill the half-barrel containing the records, and protect them from any strange Innuits. It seemed plain from the snow-tracks that some of *Ou-e-la's* friends had been recently at the hill, and *Ar-mou* went off to find him.

The notes of the 25th read thus:

To-day my King William party was ended, for the present at least. This, of course, was in correspondence to the natural course of passing events. Our separation was, however, for this reason: I desire to remain here a few days, and try and do some writing, recounting the important matter I have gained of the Pelly Bay natives relative to Sir John Franklin's Expedition, Ebierbing, Too-koo-li-too, *Mam-mark*, and her little son remaining here with me. On

the return of the successful *took-too* party of this day, I invited all the men into my *kom-mong*, and there I served each with moderate drinks of capital good Bourbon whisky. We talked, smoked, and drank—talked, smoked, and drank till every heart felt that it should be friendly to everybody. One matter is worthy of record: all the men of my party are still determined to accompany me next spring, when I purpose to *try again.*

It would seem, however, that this last statement was directly against the experience of the 5th of the month which has been recorded; for, on that day, every one of Hall's companions except Ebierbing and Too-koo-li-too had insisted on his return. *Nu-ker-zhoo* (Jack) particularly had shown the white feather even while standing before Hall, boasting of his courage; and it will be found in the story of the year 1869, that when Hall first succeeded in reaching King William's Land, this man, when the whole company were well armed, was again much alarmed at the first sight of strange Innuits. Hall certainly found each of the tribes hostile and apprehensive—mutually fearing and feared. Before setting out on this journey, his party had more than once spoken of the See-ne-mee-utes—the natives of "*See-nee*," near Cape Berens—as being a party of murderous fellows; their way of greeting a stranger* being to present a long knife seemingly as a gift, but allowed *accidentally* to slip into his breast. (See page 277.) That a fight was not in some like way begun by the Pelly Bay men on their meeting with Hall's company, seems to have been owing to their having learned from Too-koo-li-too about the ships in the bay—Hall's friends.

* The customs of the Eskimos of Cumberland Inlet in this, as reported by Mr. L. Kumlien, of the recent Howgate Expedition, seem less dangerous, but equally strange:

"When a stranger arrives at an encampment, the *Ancoot* and the stranger face one another. Both have mittens of seal-skin. The stranger complacently folds his arms over his breast, and inclines his head to one side, so as fully to expose his cheek, while the *Ancoot* deals him a terrible blow on it, sometimes felling him to the ground. The two actors now change parts, and it becomes the stranger's turn to strike, which he does with a vengeance. The two then kiss each other, the ceremony is over, and due hospitality is shown to the stranger by all.

CHAPTER IX.

JOURNEYS AROUND REPULSE BAY, SUMMER-LIFE, AND THIRD WINTER.

JUNE, 1866, TO FEBRUARY, 1867.

CHAPTER IX.

CONDITIONS NECESSARY FOR A NEW JOURNEY—EXPERIENCE WITH THE NATIVES OF PELLY BAY—ARRIVAL OF THE TRIBE AT E-NOOK-SHOO-LIK—HALL GOES OUT TO MEET THEM—RECEPTION OF THEIR AN-GE-KO—THEIR STORY OF THE WHITE MAN'S MONUMENT AT SHAR-TOO—THE TIN CUP WITH PAPER IN IT WHICH WAS THROWN AWAY—THE SKELETONS BY THE MONUMENT—THE SUPERSTITIONS OF THESE PEOPLE—HALL ACCUSED OF BRINGING SICKNESS AMONG THEM—THE HANGING OF THE OLD CHIEF AND HIS WIFE BY THEIR SON "TO TAKE THEM TO THE HAPPY LAND"—HALL KEEPS THE PEACE BETWEEN THE PELLY BAY AND THE REPULSE BAY NATIVES—SETTLES SOME OLD FEUDS IN HIS TUPIK—HIS SLEDGE JOURNEYS FOR SURVEY OF THE BAY—EMBARRASSMENTS IN HIS WORK—DEATH OF OU-E-LA'S WIFE—ILL-TREATMENT OF WOMEN—ARRIVAL OF THE WHALERS—HALL REQUESTS THEM TO SPARE MEN FROM THEIR CREWS FOR HIS NEXT JOURNEY—HIS ASSISTANCE TO THE CAPTAINS—THE SHIPS DECIDE TO WINTER IN THE BAY—HALL ENCAMPS NEAR THEM IN NOVEMBER—INTERCOURSE THROUGH THE WINTER—THE CAPTAINS WILL NOT LET THE INNUITS FURNISH HIM WITH DOGS.

"DISAPPOINTED BUT NOT DISCOURAGED";—yet Hall, when writing this, had a full consciousness that at least nine months must be passed before he could set his face again toward Ki-ki-tuk for the Records. He had turned back from Colvile Bay, as has been noted, with the words above, written down in his notes in sorrow, but with an unbroken purpose. The experience of the sledge journey had satisfied him that he must try to organize his party more wisely, if he would secure even partial success; and he looked forward with the hope of obtaining assistance for this from the whalers when they should come into the bay. The alternatives before him were either to

gain this help or to return with them to the United States. But the latter of these is not named in the journals of that season.

For a renewed advance he had fully decided that he must have the services of several armed white men as a guard, and he knew as well that he must secure full provision for a long journey and at least one good dog-team. To procure the dogs might prove to be his hardest work. For either one or both of these objects, he would be dependent on the further continuance of good-will between himself and the Repulse Bay natives and between them and the Pelly Bay men; for, as these men had already caused his own Eskimos to turn back at the very point from which he had been ready to cross to King William's Land, it was clear that, even if no hostile attack were made, the same intimidations brought to bear upon any new party might arrest its work. Among the Neitchilles a guard might be a necessity.

That the Pelly Bay men were, as *Mam-mark* had told him, "a queer people, doing many strange things," came out very plainly in their intercourse from the day of their again meeting with Hall and his natives. *See-pung-er*, who had been the first to overtake the return party on their journey, was quickly the occasion of an apprehension that he would bring out an old feud with them; for no sooner had he met with his first success in the use of a gun, than he was heard to say it would be a good thing to kill Innuits with as well as deer. He proved to be a careless fellow, too, in using the weapon, and Hall felt sure that if his men could prevent it, *See-pung-er* would never be allowed to carry it back to his own country.

The rest of the Pelly Bay men were willingly delayed some time on their journey by a long musk-ox hunt. Their coming down to E-nook-shoo-lik, where Hall made his fifty-second encampment, on

the 10th of June, excited new fears. He had come over from his quiet rest at Fort Hope, where he had much desired to make up the the notes of his late sledge journey, because the Innuits had represented that they must move nearer the whaling grounds before the disappearance of the snow and ice should take from them the means of transporting their boats and sledges. To be at hand for the capture of whales was also what he most desired for himself, in order to further his plans for securing the services of the white men.

A few days after his coming down, an alarm was given that strangers were seen in the distance, and *Oong-oo-too*, harnessing up his dogs, drove Hall rapidly over the sea-ice to meet them. At 11 p. m. they were found at a time when in trouble at crossing a fissure in the ice; their driver, taking Hall's advice to pull his dogs back from the slush in which they were plunging, crossed over readily a little nearer the encampment. The old chief *Kok-lee-arng-nŭn* and his followers renewed cordial greetings with Hall's party. Their teams were joined and sledges formed in line, and a triple team followed into E-nook-shoo-lik by a motley group, made up of sixteen men, women, and children. The *Iwillik* women then marched up singly behind the Pelly Bay *an-ge-ko*, and hung, each, some odd article, as a bead, a piece of *took-too* fringe, or an old razor upon his jacket; the *an-ge-ko* himself raising his eyes solemnly upward and now and then extending his right arm. Each Innuit took one or more of the strangers into his *tupik*, Hall having for his guest his old friend *Kok-lee-arng-nŭn;* after which, festivities followed during some days, including a mock musk-ox hunt, in which men and boys, wearing the skins of the animals, were fiercely hunted by other men and dogs.

But throughout the reception, each of the Pelly Bay men had

kept full in sight the long knife which he had shown at their first meeting. An old quarrel between *See-pung-er* and *Ou-e-la*, which had once nearly cost *Ou-e-la* his life, and another between old *See-gar* and *Kok-lee-arng-nun*, were still unsettled. It could not then be known at what moment an outbreak might occur, although *Ou-e-la* was at the time absent. He had just lost one of his wives, and knew that No. 2 was near her death. It was all-important for Hall to keep the peace. He had already learned something of value connected with the Franklin records from *See-pung-er* and his wife, and he hoped to learn much more from others of *Kok-lee-arng-nŭn's* party.

See-pung-er, three years before, had visited King William's Land. He told Hall that he had seen, near Shar-too, not far from Pelly Bay, a very high and singular *E-nook-shoo-yer* (monument), built by *kob-lu-nas*, of stones, and having on its top a piece of wood something like a hand pointing in a certain direction. He had also seen a monument about the height of a tall man, at another point somewhere between Port Parry and Cape Sabine. When asked whether he had thrown this pile down, he answered, "Only enough of it to find something within." And when further closely questioned, he said that what he found was the small tin-cup which he had just given to Too-koo-li-too; that a tight top had fitted it; and that it was thickly and tightly wrapped up and tied, and had been found full of just such looking stuff as the paper on which Hall had been writing; but, he added, "this stuff inside was good for nothing to Innuits, and so was given to the children, or thrown away." He said further that he and his uncle had spent one night near this monument, wrapping themselves up in blankets taken from a pile of white men's clothing found there, and that a *kob-lu-na's* skeleton lay by the pile. Hall

thought that this story seemed to confirm what had been before told him,—that when Franklin's ships were crushed by the ice, some of his party, after trying to go down the west side of King William's Land, had turned back, doubled Cape Felix, and come down on the eastern coast. And, at the time, he persuaded himself that the monument was the vault containing the long-desired records.

He had a curious though short experience of trials with these Pelly Bay people. His first trouble was, that, after a short absence from them, he found on his return, it had been whispered around that he had been the cause of the death of *Nu-ker-zhoo's* young child—bringing on spasms by placing his hands on its head. Relieved of apprehension from this rumor by being called on to prescribe for the old chief himself and for some children, he was told that the wife of the chief had hung herself, because he had persuaded her husband to remain longer with the Repulse Bay men, and because he had given medicine to these children. The tribe, one and all, accused Hall of being the author of these sicknesses. Not long after this the old chief himself was hung.*

But with the assistance of his two Eskimos, Hall prevented any permanent or serious quarrels between the two parties. Soon after the first coming of the Pelly Bay men, old *See-gar* and *Kok-lee-arng-*

*The circumstances of these deaths are not, however, given by Hall with his usual clearness. At a later date, he says that the son of the chief told him, with tears in his eyes, "He was very sorry he had no father or mother living with him, but that it had been his duty to hang them, as it was at their request, and that by their dying thus they would be sure of going to that happy place where all good Innuits go." *See-pung-er*, it was well known, had hung his grandfather when he had become feeble. Too-koo-li-too said that these Pelly Bay natives, as well as the Neitchilles, believed in *Kud-lee-pur-me-an* and *Ad-lee-pur-me-an* (a good and a bad place); but she thought the Iwillik people believed in nothing of the kind.

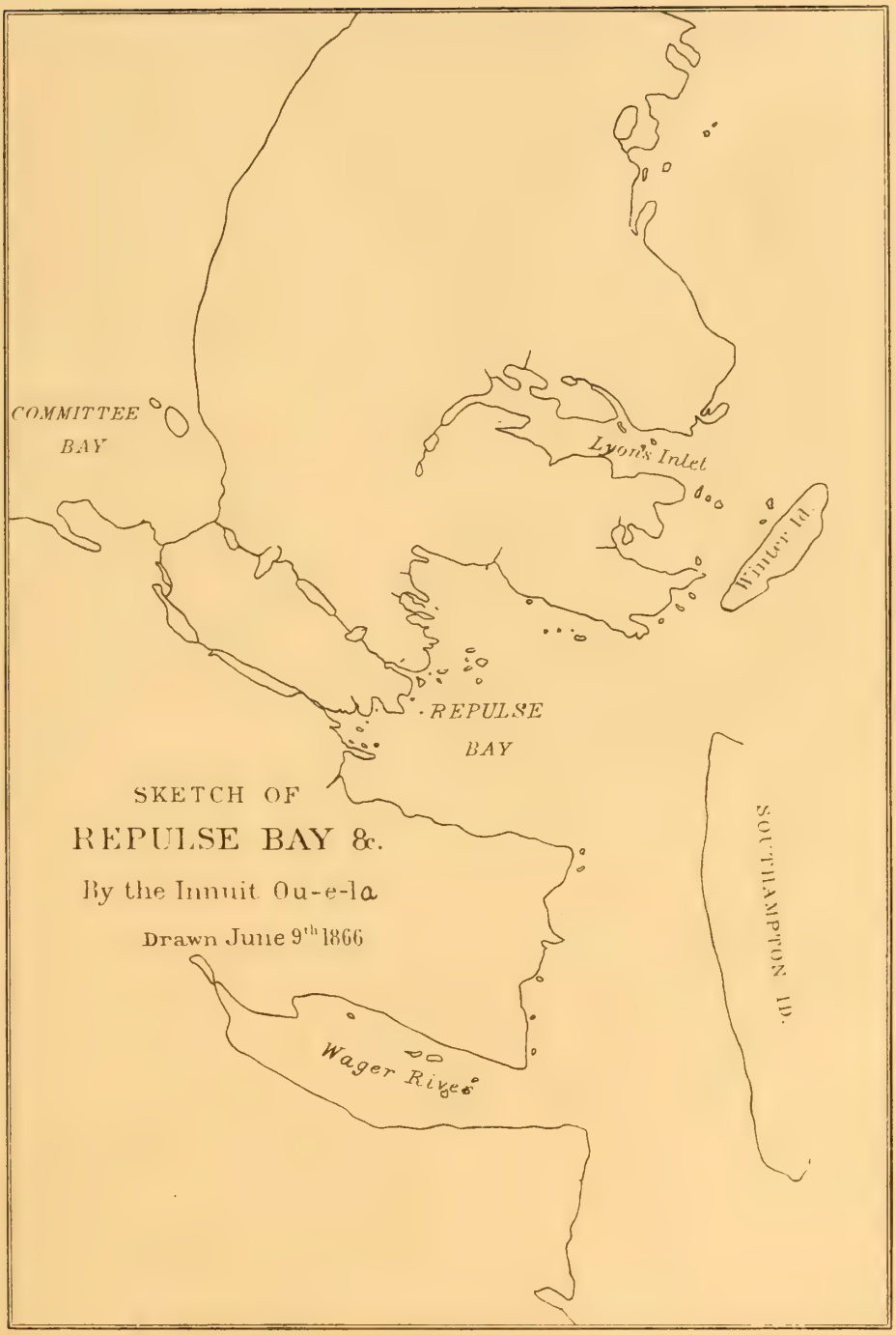
In some memoranda prepared by Hall for one of his lectures after returning from this Expedition, he speaks of this woman's having been hung as a "peace-offering." This points to a difficulty that separated the two tribes for a time, the Pelly Bay men going off some distance; in the memoranda just named, the words "a terrible time" are found in this last connection.

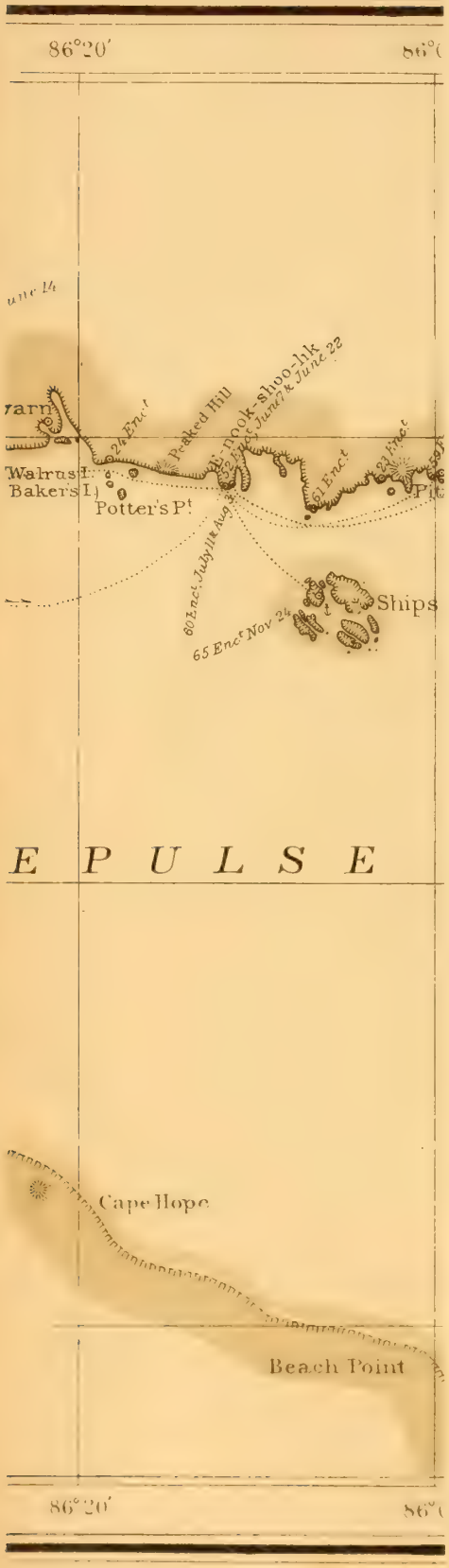
nŭn had closed, in his *tupik*, their long-standing grudge, the blind old chief confessing that he had once wronged *See-gar* by deserting him when nearly starving, and *See-gar* avowing that he no longer retained any ill-feeling. The two men then sealed their renewed friendship by such jests as these: "*Kok-lee-arg-nŭn*, why are you now tottering around with a staff, crooked as you are, your face with deep furrows, and your eyes dim; you used to be the smartest and best-looking Innuit in the whole country?" "But, *See-gar*, how is it that *you* are no longer fond of all the pretty women to be found?"—which last speech brought out a general laugh, as *See-gar's* reputation in this matter was well established.

Besides these reconciliations and the previous unhappy troubles which have been referred to, little more is found in Hall's notes of the intercourse between the two tribes, except that they remained near to each other and to the whalers, who, when they came, gave employment to both on their ships. While so employed, *Koong-e-ou-uk*, the Pelly Bay *an-ge-ko*, having been severely beaten by a sailor belonging to Captain Kilmer's ship through a misunderstanding about a pair of boots which the wife of the native was making, was protected through Hall's interposition.

While waiting for the coming of the whalers, he could not remain unoccupied. He planned for himself the work of a survey of the bay of which *Ou-e-la* drew for him a rough sketch. He hoped also to secure at least one whale, the proceeds of which with those of the one cached the year before, would be so much toward the pay of the guard he would need for Neitchille.

The sledge journeys made for this survey are marked on the accompanying map. They were mainly these: Before meeting again


COMMITTEE
BAY
Lyon's Inlet
Winter Id.
REPULSE
BAY
SKETCH OF
REPULSE BAY &.
By the Innuit Ou-e-la
Drawn June 9th 1866
Wager River
SOUTHAMPTON I.


86°20′
Peaked Hill
Bk-hook-shoo-lik
Walrus I.
Baker's I.
Potter's Pt
Ships
E P U L S E
Cape Hope
Beach Point
86°20′

with the Pelly Bay men, he had crossed from Iwillik to the west side of the bay, to a point where he discovered a river of which the Innuits had often spoken, and which he now named Grinnell River; it was found to be as large as the North Pole River of Dr. Rae *Ou-e-la*, wishing to visit his wife's grave on Tee-kee-ra, was Hall's dog-driver, and with his usual success killed several seals on the journey. The travel was difficult; they had a small sled and a small team; and the snow was tracked with blood from the feet of the dogs, made sore by the hard and sharp roughnesses of the ice-crystals on the floes. The travelers themselves had a shelter for the night within a snow wall 18 inches in height, across which they stretched their blankets. While *Ou-e-la* was on his hunt, Hall had to make his lunch on the vermin dug out from underneath the deer-skins. Astronomical observations gave for the position of Tee-kee-ra, latitude 66° 26′.

On the 14th of the month he began from E-noo-shoo-lik his long desired attempt to sketch a full outline of the coast for his friends the whalers; hoping thus to tempt their more frequent visits to the bay. He had for his companions only two Innuit boys, *Oot-pik* and *She-nuk-shoo*, who were to be drivers and hunters. With these he started first for Fort Hope. On the first day, the chronometers were injured by the breaking of the tie while passing over very rough floes. The dogs suffered much from sore feet; one of them falling into a crack in the ice was saved only by the use of a lasso.

The second day was divided between surveying and an advance on the route. But after a halt to secure a deer, the travel was continued until 3 a. m. of the 16th, when they reached the banks of North Pole River. On the last part of their route the melted snow had been found in some places standing to the depth of three feet on the ice;

HALL'S JOURNEYS
IN 1866

86°40′ 86°20′ 86°00′ 85°40′

66°30′ 66°20′ 66°10′

R E P U L S E B A Y

Hayland Bay

Talloon M^t

Talloon Enc^t
64 Enc^t

Ft. Hope
30 Enc^t, May - June 15

North Ibbett Rock

Beacon Hill

Low Tide Enc^t

Talloon Bay

Harrys Landing

Home or Lake Enc^t

61 & 58 Enc^ts, May 27, June 14

62 Enc^t

Nowyarn

Iwillik

Walrus I. (Baker's I.)

Potter's P^t

24 Enc^t

Peaked Hill

Ee-hook-shoo-lik
55 Enc^t, June 7 & June 22

61 Enc^t

23 Enc^t

Pikiktouyer (Heights)

Sheglua
56 Enc^t, June 25

High Land

Rock Knob
58 Enc^t, July 5

Tin-nee-jee-vee Cove

Walrus I. (Ooglariu)
55 Enc^t, June 18

Teckeera
June 2

Ruins of Igloos
June 3

Ships Harbor Ids.

80 Enc^t, July 1 Aug 3

65 Enc^t Nov 24

Kerngmuktoo
57 Enc^t June 23

Ooglarnyour I (Hall's I.)
22 Enc^t

21 Enc^t

Urnnell

June 3

Prominent Hill (M^t Washington)

Cape Hope

Beach Point

Drawn by A Lindenkohl

the dogs with great difficulty dragged the sled through. Hall sent his boys off to hunt, and occupied the next two days in surveys made from Beacon Hill, from which place the coast of Southampton Island again loomed up by refraction.

Renewing his journey and arriving again at Tee-kee-ra, he busied himself in renewed observations for position, in taking sextant-angles and compass-bearings, and in sketching the coast-line. In such work the time passed far more swiftly than while housed by the storms which had swept over his *igloo.* The boys proved to be good hunters for deer and for ducks, but failed to secure a single seal by their invariably bursting into a loud laugh when getting near the animals. To help their seal-training, he afterward made for each a shield like those used by the Greenlanders. When he was back at E-nook-shoo-lik the whole party of the Innuits had gone off, leaving no sign whatever to tell the white man where to find them. Hastening to Ships' Harbor Islands, he found no traces of them, and returned to E-nook-shoo-lik to spend two days more in his surveys. Having crossed next to Sheg-lua, at the head of the bay but still without success in his search, on the 28th he set out for Oog-la-ri-your Island, making a difficult journey, but finding his old friends about five miles from the island. The boys were the first to see the *tupiks* on the shore. Ebierbing and Too-koo-li-too had been persuaded by the others to go off with some friends for a short deer-hunt. The next sledge trip was to Rock Knob; thence to Pi-tik-tou-yer Heights, and, finally, back to the neighborhood of E-nook-shoo-lik, during which journeys and up to August 3 the observations and sketching of the coast-line were continued.

These had not been made without trying experiences. The

changing temperatures of the past seasons had cracked the silvering in many places on the mirrors of his sextant, and rapid and unaccountable changes appeared in the index corrections. His compass often changed so rapidly that no dependence was placed on its readings; and excessive refraction shut out some points of land and brought new ones prominently in view. "At times an island seemed to rise and fall as if an earthquake were at work."

In the day-time, radiation often forced his work into the night; but the Innuits made much use of the night for their work and their boisterous festivities; and by staying up all night and sleeping all day, created for him such an uncertainty of time that he sometimes forgot to wind his chronometers, and was perplexed when writing up his notes. Overcoming his difficulties and annoyances so far as he could, he began the sketch of the bay, of which the accompanying map represents the line as found completed during the later years of his stay.

The journeys were not without some incidents of interest. At Pi-tik-tou-yer, he found a well-built circular stone wall 30 feet in diameter. It was an old camping-ground, showing many Eskimo remains, and offering inducements to any one whose mind was not, like his, absorbed in other purposes, to remain for its full exploration.

Incidents of a different character, however, now filled up all the hours of thought not given by Hall to his main work. This seems plain from the extreme fullness of his notes when setting down the continued annoyances to which he was still subjected. The iron rule of Innuit customs, already often referred to as hindering his plans, seems to have stretched itself out before him as though it must touch somewhere every purpose which he might form. It were useless to specify such cases, a number of which will be found in future chapters; a

single incident of interest may be here noted. On the 1st of July, *Ou-e-la*, the chief, lost his only remaining wife, known under the name of Queen Emma. The poor creature had been very harshly treated through a long sickness, having been refused nutritious food at a time when it might have saved her life, and again refused when charged, through jealousy, with giving premature birth to a child without informing her husband of it. She was accounted guilty through the decree of the *an-ge-ko*, which shut out all protestations of innocence from herself and her mother; and the maledictions poured upon her by the ignorant of the village had helped to hasten her death. Her sufferings were another proof of the indifference and hard-heartedness found habitually to prevail toward the women; other instances frequently occurring, as in the case of *See-pung-er's* wife, compelled to walk more than sixty miles, with a *ky-ak* on her head and a child of three years in her hood, though herself in a delicate condition.* The death of Queen Emma gave Hall some annoyance, because *Ou-e-la's* old enmity against the Pelly Bay men was now revived by the declaration of the *an-ge-ko* that it was their coming which had caused it.

But some relief for all this was at hand. His health, which had been somewhat broken, was restored. The season had been almost

* The degraded condition of women in countries not under the influence of Christianity is too well known to need comment. The chief of a tribe near the Mackenzie expressed the common feeling of Northern savages when he said:

"Women were made for labor. One of them can carry or haul as much as two men can do. They also pitch our tents, make and mend our clothing, keep us warm at night; and, in fact, there is no such thing as traveling any considerable distance, or for any length of time, in this country without their assistance. Though they can do everything, they are maintained at a trifling expense; for as they stand cook, the very *licking of their fingers in scarce times is sufficient for their subsistence.*"—(Hearne's Journey to the North Ocean, p. 54.)

Compare with this their condition in Central Australia: "While husband, father, or brother is feasting on the game which she has cooked, a wife or sister thinks herself fortunate if now and then a nearly-cleaned bone or a piece of scorched meat is tossed to her as to a dog.—Wood's Uncivilized Races.)

uninterruptedly pleasant; during the nights the thermometer had not fallen below 40°, ranging during the day between 48° and 57°. His Innuit friends, from whom he had at one time separated himself, were not really estranged from him, and Ebierbing and Too-koo-li-too stood, as ever, steadfastly close. The relief came on the last days of the month, when the first whale of the season was heard to blow; and better still, when refraction brought up from the ice-horizon the forms of three ships under full sail.

It was not a mirage of disappointment. A boat from the Pioneer, Captain Morgan, of New London, in a few hours pushed off to hail Hall from the shore; and it cannot be thought unmanly in him to have recorded that he answered this salutation in tears. The sight once more of a single friend, from the midst of his firmest friends, was a full overmatch for all the roughness that had been forced upon his nature by the ignorant and the degraded. To complete the pleasurable change, several other vessels soon came to Ships' Harbor Islands, and the Black Eagle brought to him letters from Mr. Grinnell. From Messrs. Harpers, his publishers, they brought a copy of the "Arctic Researches," the preface of which volume had been dated "On Board the Bark Monticello, June 30, 1864," and its last proof-corrections sent from the ship when just leaving the harbor of St. John's, with the indorsement, "All well and in good spirits, bound for the glorious North."

Mr. Grinnell sent the following letter from Lady Franklin to Mr Cornelius Grinnell:

UPPER GOVE LODGE, *October* 18, 1865.

MY DEAR CORNELIUS: I return your father's letter with many thanks. Please thank him from [me] for his kind remembrance of the deep interest I feel in all these researches of his brave and adventurous *protégé*, and ask him to con-

tinue sending me all the information he gets. No one, especially no one of the Arctic officers, can be indifferent to the news, but they see the painful side of the matter as well as the other. It is our bounden duty, as it is an impetuous instinct, to rescue them if possible, even though we may feel shocked as at the sight of skeletons rising in their winding-sheets from the tombs; but the latter impression seems among people in general to be the prevailing one. It is felt that they, or *he*, would return, after a death of near twenty years, to a world that he knows not, in which the loved were gone, the living changed, and in which his own brain would turn with the momentous pressure of his feelings and the bewilderment of his ideas. Sir Roderick seems shocked at the news. He has no faith at present in the recovery of any living man, and deprecates more harrowing revelations. On this latter point I am sure you will guard, dear Mr. Grinnell. If the journals of my husband's expedition should be brought to light, nothing that reflects on the character of another should be published—nothing that would give sharp pain to any individual living. As respects my husband, I feel sure that Mr. Grinnell will yield me his journal if he should ever get it into his possession. I offered £100 for it, in McClintock's Expedition, to any man who brings it back to me. That reward shall hold good, though I am sure Mr. Hall does not require any pecuniary stimulus for the good work he is engaged in.

I wish I might be allowed to offer another £100 toward any equipment that may be made in future, either in aid of Mr. Hall's work or for his own recovery, should he unfortunately be missing. I would gladly have done this earlier, had I received timely information of his second voyage to Repulse Bay, because I should have felt he was then in the right course, and doing the right thing. When his first plan of going to Northumberland Inlet was brought before me in 1860, it was represented to me by all the Arctic people as the wildest and most foolhardy of schemes, which must necessarily fail, and with which, for the poor man's own sake, I ought to have nothing to do. I believe Hall is now doing exactly what should have been done from the beginning, but which no government could *order* to be done. Therefore, you must see how natural it is that I should like, even in the humblest and most *subordinate* way, to help, or to make Mr. Hall feel that I sympathize, in his labors. It is painful to me that I should appear to have no heart for the rescue of others, because my own dear husband has long been beyond the reach of all rescue. * * *

Invited to a sofa on the Ansell Gibbs, Hall again found the change from his *igloo* too great to permit sleep, and at 1 a. m. of the next day was off in the whale-boats cruising with the men.

On this first visit, intent on the one purpose of renewing his explorations, he expressed his desire to secure from these vessels the five white men needed to accompany him; but he met with little encouragement, for the ships having their bare complement, could hardly be expected to spare a man with justice to the objects of their voyage and their obligations to the owners. This difficulty, however, Hall at once proposed to overcome by securing for the ships as many Innuits as the white men he asked for, and Captain Kilmer then engaged that if his ship could return home in the month of September following, with a full cargo of oil, he would leave the men who might be engaged by Hall, and whatever provisions he would need.

During the whaling season, assistance was rendered to all the whalers, both by Hall's personal efforts and by his influence with the natives. He made observations for time, and was gratified to learn that the rates which he had given to the ships for their chronometers on the previous year, had proved correct. He offered advice as to which whaling-grounds promised the best success; he sent out his own parties in the hunts to supply the ships with deer-meat; and for a time nursed in his own *tupik* one of the sailors who had the scurvy.

The captains were much exercised as to their success in whaling, finding it necessary to make several cruises in different directions, and yet without satisfactory results. Morgan, of the Pioneer, before coming into the bay had attempted to get down Frozen Strait, but was prevented by the ice. Cruising next west, and then to the southeast down the Welcome, he had found what seemed a passage there into the Duke of York's Bay, but only looked into it, fearing it was shallow, and finding the bay yet filled with ice. Parry's chart was found by

Hall to have the head of the bay marked "Unexplored." Captain Morgan's observations gave ground for hope that a new channel might be found. Later in the season, by advice from Hall of what Parry and Lyon had said of the whales found in Gore Bay and Lyon's Inlet, and from what the natives also said of this, a boat was sent into those waters from each of the vessels, but without success.

The parties sent out to hunt for supplies for the ships were generally diligent and successful. One of these, after killing six deer, returned without Ebierbing; on their reporting which, Hall immediately went back with them, and found his lost man at the head of the bay. He had been too busy in the hunt to keep sight of his companions, and was well satisfied that he would be sent for; but he had had the pleasant experience of finding a wolf upon his track, to escape from which he had to wade into a lake and remain there until he tired out the animal's watch. Hall and his party heavily loaded themselves with Ebierbing's venison, but on their way to the boat, Hall was nearly choked by the string which held his pack catching tight under his chin.

Another party of six men and three boys, sent out for the double purpose of killing deer, and, if possible, a whale, secured a whale, cached the blubber and brought back the bone from the head. From its length—9 feet 6 inches from the butt to the end of the hair—Hall judged that sixty barrels of oil could be made from the blubber. The whale's whole length was 60 feet.

By the 1st of September, with the help of Ebierbing, *Ar-mou*, and two other natives, he finished *gumming*, washing and preparing the bone of this whale and what remained of the one killed the year before. A part of the bone belonging to him had been carried off from the

shore by some of the sailors and not entirely restored. Making up his remaining property into eighteen bundles, tied with rope-lashings and a three-stranded braid woven by *Mam-mark*, he placed on board the Ansell Gibbs a weight of about 1,500 pounds, to be sold on the return of the ship to the United States.

But the whalers were not to return that season. The meager results of their cruises were now forcing the four ships, the Black Eagle, Ansell Gibbs, Concordia, and Glacier, to remain out another year; and their captains were soon to choose between their wintering in this bay or else at Marble or at Depot Island. The choice between these was of the utmost moment to Hall. If the decision should be to winter at the places last named, none of the crews could be spared to him until the ships should have passed through another year. To go down with them, as invited, might possibly give him the opportunity of learning something of Crozier from the natives of Chesterfield Inlet, for there were rumors of their having seen him. And yet to remain where he was, if the ships left him, was of little promise, since his next journey was dependent entirely on his getting the men he needed, and he was unable to effect the arrangement by which he proposed to substitute for such as might be left with him an equal number of Eskimos; the natives themselves, with but one exception, were unwilling to go. But if the vessels should winter in the bay, he would have the five men who might volunteer for the spring months at the wages of $50 per month, and with these he hoped to make his journey to King William Land, return before the next whaling season was over, and be in the United States in the fall of 1867. He waited for the decision of the captains with no little anxiety.

Returning to Beacon Hill and erecting his *tupik* on the same spot

where Rae had his tents in 1847, his party succeeded within the next nine days in killing forty-one deer, but complained that the animals were shy and had kept off the coast. The crisping of the snow under foot was heard by the deer a long way off, and Hall himself had very little success, for when taking aim, his excitement was such that he invariably failed. He does not give his reasons for finding himself under the influence of this "buck-fever"; they may be almost inferred from what has been just written. His right eye had suffered some injury from his having neglected to use the colored glasses when taking his sextant observations; yet he made daily tramps from twelve to fifteen miles in the hunts.

Under the anxieties which have been named and the rumor that the ships were to winter at Marble Island in the middle of the month, he again visited the Ansell Gibbs. The harbor was already filled with heavy ice, and the ships were constantly employed in keeping themselves free; but the decision as to the place of wintering had not yet been made. On his return, before reaching Iwillik, he met with a severe storm which nearly capsized the Sylvia, and in landing he was gale-bound for three days, soon after which Ebierbing became dangerously ill, continuing sick the whole of the following month. Hall seldom left him.

His chief trials, however, seemed now about to end. The captains decided they would remain in the bay, and he had volunteers for his next journey. For carrying out his plans, therefore, and for a closer social intercourse, on the 24th of November, he moved near the ships, building for himself an *igloo* on one of the small islands of the group within which the whalers had anchored (No. 1 of the map of Ship's Harbor Island). Intercourse with the ships then became still more cordial.

The amusements so necessary to sustain the cheerfulness and the health of officers and men during the tedious rigors of an Arctic winter, were fully maintained on board. A dress ball was given on the 29th, which was kept by the New England captains as Thanksgiving Day. In another, on New Year's eve, when some of the crew and a few of the Innuit women were dressed like civilized ladies, Hall had to make his choice between dancing and speech-making; preferring the former, he led off with the first mate of the ship. The captains always held a seat in reserve for him at their "*gammings*"—yarn-spinnings, chatting, and smoking; he reciprocated these hospitalities by sharing with his friends the stores lately received from Mr. Grinnell and by liberal gifts of skin-clothing. But while passing through these enjoyments nothing diverted his attention from his main purpose of selecting the volunteers he needed. Quite a number offered themselves; and on shore he began the instruction of those whom he accepted by setting them at work to dig out snow-drifts, and by sending them at different times with his Eskimos to bring in meat from the deposits. He now thought that he had full reason to expect that when the stormy season had passed, he could make with these men a second sledge journey with success.

Strange as it might seem to any one but Hall, for these two and a half months he still lived in his snow-hut, in daily sight and sound of the ships, which were now comfortably housed for the winter; and this although his very frequent invitations to their warm and hospitable cabins warrant the belief that he might have taken up his quarters on board. But he declares that he could not rest with ease unless in his *igloo*. It was his own; he could write up his notes in it and study his Arctic books. His plans for the next season, too, were again ab-

sorbing his thoughts. Even the pack of wolves which swept over his *igloo* near the ships, carrying off one of the dogs, is spoken of in his journal as though it had happened as an ordinary occurrence, and as though it were in the lonesomeness of Beacon Hill or among the Innuits at Noowook. He would not depart from his rough Arctic diet; nor in any other way unfit himself for the mission to which he still thought himself called. But this was again suddenly arrested. Before the first month of the new year closed, he found that he could not possibly make up a dog-team for a new journey. He might lose a whole third year, but this, at any sacrifice, he must endeavor to prevent: now that volunteers are engaged, he must secure the dogs.

CHAPTER X.

SLEDGE JOURNEY TO IG-LOO-LIK FOR DOGS.

FEBRUARY 7 TO APRIL 1, 1867.

CHAPTER X.

COUNTER-CLAIMS ON THE INNUITS FOR THEIR DOGS—HALL DETERMINES TO MAKE A SLEDGE JOURNEY TO IG-LOO-LIK TO PURCHASE HIS OWN TEAM—LEAVES SHIPS' HARBOR ISLANDS FEBRUARY 7—FIRST DELAYS—OU-E-LA LOSES HIS WAY—PROVISIONS BECOME SCARCE—THE MOUTHS OF THE DOGS TIED UP TO PREVENT THEIR EATING THE HARNESS—AM-I-TOKE REACHED, BUT NO NATIVES FOUND—OU-E-LA ACCUSES HALL OF BRINGING HIM TO STARVATION—IG-LOO-LIK REACHED ON THE 27TH—PURCHASE OF DOGS—VISIT TO TERN ISLAND, TO PARRY'S FLAG-STAFF—OU-E-LA PUTS A WIDOW AND HER HOUSEHOLD GOODS ON THE RETURN SLED—HALL PUTS HER OFF ON THE ICE—STARTS BACK WITH ANOTHER NATIVE AS DRIVER—OU-E-LA'S BAD CONDUCT ON THE RETURN—HALL AGAIN SIGHTS THE SHIPS ON THE 30TH OF MARCH—THE CAPTAINS NOW REFUSE TO LET HIM HAVE THE MEN FOR HIS JOURNEY.

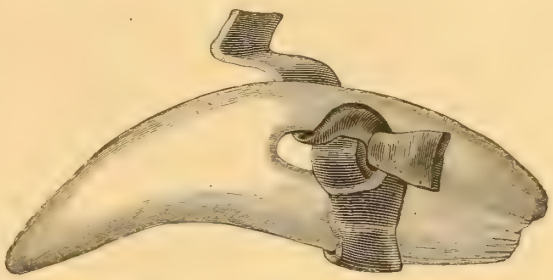
Dogs enough could be found among the natives. They owned sixty-eight; a number sufficient for nine or ten ordinary teams. Hall had several dogs of his own, and asked but thirteen, to make up the two teams he needed. He had anticipated no difficulty in securing these, for he had just claims upon the natives, as he had bargained for such as he would ask for, and really paid for the larger number in tobacco and other articles. But the captains of the four vessels unitedly interposed. They insisted that not a single dog should be permitted by the Innuits to go on this journey; claiming that they "had fed these people through the winter, and had as yet no opportunity of receiving much in return. The natives would soon need all their dogs in sledding blubber and bone from the open water to the ships, and the time

of Hall's return from his proposed journey might be beyond the opening of the season. Then, men and dogs must be actively employed to increase, if possible, the poor returns of the past year." Hall could not even get one of his own dogs, which he had put in *Ook-bar-loo's* trust on returning from the last sledge journey. He was the more surprised at this issue, because the use of the teams was as clearly within the ideas of the conversations held in the winter, as was his selection of the white men, which had met the approval of the captains; if any difficulty on this point had arisen in these conversations some trace of it would be found in his full notes Helpless to enforce claims upon the natives, who were fully willing to keep their promises, he determined to make a sledge trip to Am-i-toke, or perhaps to Ig-loolik, even in the very depth of the winter, to buy his teams. The journey might be one of more than three hundred miles; but another year could not be lost. The captains cordially supplied him with articles of barter, which, within the next few days, he carefully arranged, making up also his stores for the trip. Sending his white men to one of the deposits to get whale-meat for the dog-food, he fed the men on their return with whale-skin, remarking in his notes that he had educated them until they really liked raw, frozen meat, and adding that, perhaps with these very men, on his next voyage, D. V., he would push his discoveries to the *North Pole.* His thoughts had been on such a voyage during the past season. It had been discussed with the whalers, and he had openly avowed his intention to organize an expedition to the Pole as soon as he had completed his present mission; he held this voyage in mind when examining the volunteers for his present journey.

After waiting the return of some of the natives from a trip made

to Lyon's Inlet for deer-meat, by the 7th of the month he had secured fourteen dogs, and left Ships Harbor Islands for Ig-loo-lik. The temperature was 40° below zero.* Ebierbing and Too-koo-li-too, for reasons not named, were left behind, and Frank Lailor, one of the white men, was placed in charge of his *igloo*. *Ou-e-la*, with his wife and half-breed child and the boy *Oot-pik*, were his only companions.

Arriving opposite Pitiktouyer, *Ou-e-la*, agreeably to Innuit custom, went on shore to pay a visit to the grave of his brother, *Shoo-she-ark-nook*, and here the first trying delay was met with; for after a night in an *igloo*, they already missed one of the dogs and found two others to be useless. A return to the ships became necessary. But another delay was occasioned by the dog-lines becoming entangled; on which the dogs were detached from the *pe-to*, but before being again fastened to the sled, they had roughly dragged Hall and *Oot-pik* along for some distance. This, however, was but a renewal of former experiences; for Hall had more than once known the dog-teams pull well for a little while, then suddenly wheel around and overturn him and his driver. The remedy had been, to jump in among them and pound away with the hatchet until they were made tractable. The *pe-to*, on which so much depended, was the line, made of heavy walrus or seal skin which fastened the dog-traces to the forward part of the sledge-runners:



BEAR-TOOTH, USED AS A TOGGLE.

* It certainly marks strong resolution and courage in Hall to undertake this northern trip in *February*. Captain Nares' (R. N.) judgment is, that, unless for the purpose of saving life, no one should be called upon to undergo the fearful privations of an Arctic sledge journey during March or even in the early part of April.—(Narrative of a Voyage to the Polar Sea, 1878.)

passed through ivory eyelets at the end of the traces, its ends were bound together by a toggle.

When Hall returned, he found that the captains were on a fishing excursion upon a lake seven miles distant. He had to send to them a request for their consent to get other dogs; he slept that night in his old *igloo* with Lailor, and the next day rejoined *Ou-e-la;* his team had already traveled sixty-two miles since their first leaving the ships.

On the 10th, they passed up the river at the mouth of which they had built their first *igloo,* and after crossing valleys filled with deep snow, and ascending a very steep hill, built their second hut upon a little lake. *Ou-e-la's* child had already proved an annoyance by its constant whining and insatiable clamor for bread. On the 11th, Ross Bay was crossed, in which was observed a tide-hole, half a mile in length, that smoked like a coal-pit. Seals were sporting in it. The day following, they came to an *igloo* occupied by a party of Innuits, which *Ar-mou's* brother, with a team of seven dogs, was conducting toward Am-i-toke; one of the boys of this party, *Tuk-kee-li-ke-ta,* was the son of *Ag-loo-ka,** a native who was said to have exchanged names with Parry.† An inlet was crossed which was not found on Parry's chart. [For the route see Map, Capter XII.]

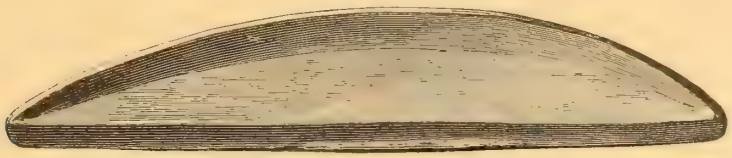
On the 13th, when passing an advance-deposit made by these natives, *Ou-e-la* liberally helped himself from it to whale and deer meat. The next day, he seemed to have lost the way, wandering about over low ground until, night coming on, he built an *igloo* on a small pond which was found to be frozen solid. During the whole of the

* Spoken of by Parry as being ten years old when met by him. (Journal, 1821–'23, p. 367.)

† The name *Ag-loo-ka* appears in Hall's notes as in use by the Innuits at one time for Ross, at another for Crozier, and here for Parry; it seems to be a generic term for an officer in command.

15th and 16th, the party were gale-bound, but the time was not wholly lost; their bedding and clothing were dried in different ways, the clothing by wearing it in bed; Hall's boots were taken in, one at a time, and kept under his jacket, close to his person. A heavy coating of frost showed itself between his two jackets, for the temperature had been 80° below zero.

The stock of provisions was now getting low, bringing fear of a want of food before they could possibly renew their supplies; nor was it at all certain that they would find natives at Am-i-toke. If they did not, they must hunt walrus out on the drifting ice, and thence push on to Ig-loo-lik. Thus far, they had lived almost wholly on dog-food, their only good provision having been four saddles of venison and twenty pounds of sea-bread, with a little coffee, sugar, and tea; raw whale meat, skin, and blubber made their substantial working diet. Nothing had been cooked but a little coffee or tea, and in this cooking, in making drinking water, and in drying their clothing, they had consumed two gallons of whale-oil; Hall's native lamp was about half



HALL'S LAMP.

the usual size. An entrance-way to their *igloo*, 30 feet in length, made of three united oval *igloos*, had been built, that the dogs might be protected from the storm; for the less they were exposed, the less hungry and poor would they become. They were sometimes fed freely from the whale-beef, a chunk of a hundred and fifty pounds

of which was given to the hungry beasts, who had already broken into the storehouse, and twice nearly eaten up their harness.

Awaking at one o'clock the next morning, Hall pulled his thermometer into the *igloo* by a string, and found that the temperature was 30° below zero. Looking through the hole, he observed that the wind had died away, the sky was clear, and the moon was shining brightly. Filling his coffee-pot then with ice, he hung it over the fire-lamp, and, after resting for an hour or more, made his coffee, packed up, and again started. *Ou-e-la's* child a second time proved very troublesome, causing repeated halts; but by evening Hall had advanced about twenty-two miles, when the party built an *igloo* large enough to bring within it all their goods for safety from the dogs, which had become yet more savage, for even while feeding, the fierce brutes were with difficulty controlled. In the morning, when the *igloo* was unsealed, they rushed into the passage-way, wedging *Oot-pik* in it so tight that he could not move, and was released only after *Ou-e-la* and Hall had finished pounding them out of the hut.

On the 18th and 19th, he was again gale-bound; his notes express his feelings in the words "Too bad; but God overrules all." The food on this day was of stinking *ook-gook* and whale-meat of a greenish tint, buttered with strong whale-blubber. *Ou-e-la* thought it would take at least five days yet to reach Am-i-toke—discouraging enough, for the plan was to be back at the ships in time to start for King Willliam's Land March 15, but this it now seemed impossible to effect.

On the 20th, the temperature was —10° at noon, but the wind was quite strong, and the drifting snow beat fiercely in their faces; yet a steaming cloud of vapor rose from the dogs as they ran along. Hall thought that if the weather moderated they would not give out

for a few days, although their food was nearly gone; but it was found necessary to tie up their mouths to keep them from eating their draught-lines as they ran. The second day after this, they were fed on a little *ook-gook* blubber found in a deposit on the shore of the sea which they had now reached by an advance of twenty-four miles. At one time they had pulled through a gorge 10 feet wide, the quartz walls of which were 30 feet high. On the 23d, Am-i-toke was reached, but *not a native was to be seen.* A journey of four days was yet to be made to Ig-loo-lik. A strong wind now preventing any advance, their *igloo* on the 24th was built about six miles north of the Ooglit Islands.

The next day twenty-three miles were made; but at night their food was on some walrus-hide, two years old, which *Ou-e-la* had found with the blubber at the deposit. On the 26th, their breakfast was on the very last of the meat. Hall says they satisfied their hunger by sharpening up their knives in anticipation of the walrus feast they might have that night at Ping-it-ka-lik. One of the dogs had been furiously set upon by the rest, and before being rescued was nearly eaten up; she was lashed in furs on the sledge. Through the whole day *Ou-e-la* was anxiously on the look-out for natives, climbing every high piece of ice, and looking sharply to discover some sledge-track, but finding none, he began to look the very picture of despair. From the slower progress now making, it seemed to him that Ping-it-ka-lik could not be reached before night, and if it were, they would find no Innuits there. Before long, therefore, he burst out in anger, charging Hall with having brought him and his family into a starving and hopeless condition, and his wife and *Oot-pik*, catching his spirit, looked as savage, and cried out that they would die from starvation. Hall quieted their fears as best he could, and at night in the *igloo* gave to

each a supper of hot tea, with some of his remaining eight pounds of sea-bread, pleasing *Ou-e-la* by giving to his little idol child as much as to any one of the grown people. He reminded them that they might find walrus deposits at Ping-it-ka-lik, but, if not, could push on to Ig-loo-lik; that until then, the rest of his bread would be for their free use; and that, even if no Innuits or deposits should be found at Ig-loo-lik, they need not think of starvation, for with their instruments and gear they could get walrus on the drifting ice in the places with which *Ou-e-la* was familiar. He then gave them some account of the sufferings of white men from want of food in like circumstances with their own; relating those of Franklin and his companions, Richardson and Back, on their return from the Polar Sea. Before sleep came, *Ou-e-la's* good humor had returned.

The next morning, sledge-tracks were seen, and the party, lightening their load by leaving most of their stores in a snow-house, pressed forward toward Ig-loo-lik. At 2 p. m. the voice of a driver and the cry of his dogs were heard, and an hour later Hall was in the village, where he was quickly surrounded by a crowd of men, women, and children, who had heard that a *kob-lu-na* had come. An *igloo* was soon built, and a log of walrus meat and blubber, weighing full 500 pounds, was drawn in and set before his party. Their breakfast on the next day was once more on cooked meat, after which meal the Ig-loo-lik *an-ge-ko* made his appearance, and spent some time in an "*an-koot-ing*"-welcome service, the details of which Hall has not noted.

During the first five days of the month of March, he lived in his snow-house at Ig-loo-lik among the natives of this large tribe, and enjoyed his intercourse. He was well treated, his wants entirely sup-

plied, and his *igloo* often crowded. Interested in watching the manners and customs of the place, and in listening to its traditions, he seems to have been so much occupied in observing the new things about him that he took but rough notes, intending at some future time to write them out more fully. This time never came.

The following are a few of the names of the Innuits here met with, some of which found within Hall's full list will appear again on his second visit to this place, as well as on their visits to the whalers in the bay: *Ook-pik* (the *Eshemutta*) and his wife, *Kok-goot; Nuk-er-top-big* and his wife, *Shuk-too-in; Ar-tung-un* and his wife, *Muk-e-ung; Kia* and his wife, *Pou-de-lung-e-ute; Ag-loo-ka; Man-u-mit:* and the four boys, *Now-yook; Ard-er-rook*, *Pow-der*, and *Amer-wer-rik*. Hall counted at one time forty-two women. While he was writing down his long list, the natives looked on with wonder, and showed yet more surprise when he was able to read their names out of his book. Among those around him he found some connections of Too-koo-li-too.

The Ig-loo-lik people appeared to have frequent intercourse with Too-noo-nee (Pond's Bay), from which place they obtained their knives and other weapons. The journey to the bay, they said, could be made, by rapid traveling, in four days. *Ar-tung-un*, who had come over from Tern Island, remembered Parry and Lyon, both of whom he said were very fond of little children. Lyon, he recollected, had danced the little ones, and sung nursery rhymes to them. *Ar-tung-un* himself could sing several songs learned from the sailors, and could count in English. He said that he was once dead on board Parry's ship, and was brought to life by Parry's *an-ge-ko* bleeding him, and he showed Hall the scar on his arm made by the lancet.

Wishing to be well posted in the ways of Ig-loo-lik *an-ge-kos*, Hall

requested a professional visit, when two *an-ge-kos* came to his hut, and after receiving a file as compensation in advance, went through a performance of two hours for the relief of his face which was terribly sore from late frost-bites. He thought the performances really wonderful, and that these men are not impostors, but exercise their work in earnest.

Having now secured the full good-will of Ig-loo-lik by presenting to the women full supplies of needles and beads,—going around himself among the *igloos* to deliver these,—he built a high, circular wall of snow close to his own hut for a trading mart. In the center of this he placed his sea-chest, and on it the different articles which he had brought for the purchase of the dogs. His list embraced files, hatchets, butcher and clasp knives, and women's or chopping knives, seal and walrus harpoons, pieces of old hoop-iron, old whale-irons to make into seal-spears, pieces of wood for arrows, bows and spear-handles,

INNUIT ARROWS.

tin cups and pans, old meat-cans, needles, fish-hooks, fish-lines, pieces of tin for *shak-koon* (skin-dressing), old wrought nails and other bits of iron, beads, sheet-brass for *kar-oons*, and iron spoons. There was a crowd of men and women, some of whom had come from Tern Island to receive presents. He traded for fourteen dogs in as many minutes, setting his own price on each.

On the 6th, he accompanied several families to a settlement out on the ice, near the walrus-grounds, and found there twenty-three *igloos;* an unusual neatness showing itself in their floors of snow, "iced and almost unstained;" most of them being lined with seal and walrus

skins, making them quite warm. Their beds were of the most comfortable kind, great pains being taken when making them to lay down, first a netting of short sticks or whalebone; then walrus or *ookgook* skins; dried grass; then skins of some kind; then deer-skins. Few walruses were taken, but Hall bought two rolls of *kow*, weighing in all about four thousand pounds, for which he gave some small pieces of hoop-iron, an old meat-can, and a stick of wood.*

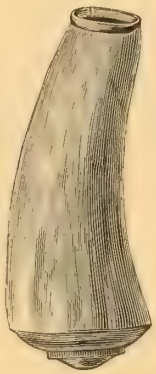
A few days after, a visit was made with *Ou-e-la* to Tern Island, to get the services of a native and more walrus meat and blubber. Nine sledges, each drawn by from twelve to twenty dogs, accompanied them, all bound for the sealing-grounds. They made a lively scene, cracking their whips and racing. The sealers soon left the sledges, and, with their seal-dogs, went off to find seal-holes. On the arrival of Hall's party at the island, most of the men were found to be absent, but in a few *igloos* were wives and several widows. Some of these were very dark colored. Every one of them wanted needles and beads; the wife of *Ark-shank-u* asking a needle for every child she had and one more for a child she was expecting. In the evening, this woman and the mother of the *an-ge-ko* entertained Hall with another performance, the woman adding to her share in it the small matter of finding in the head of her boy of fourteen years, a plentiful supply of creepers which she promptly transferred to her mouth. While Hall was witnessing this performance, the dogs ate up most of their harness which *Ou-e-la* had carelessly left on them.

Getting ready to return from the island the next day, he found that *Ou-e-la*, without asking leave, had here made arrangements to

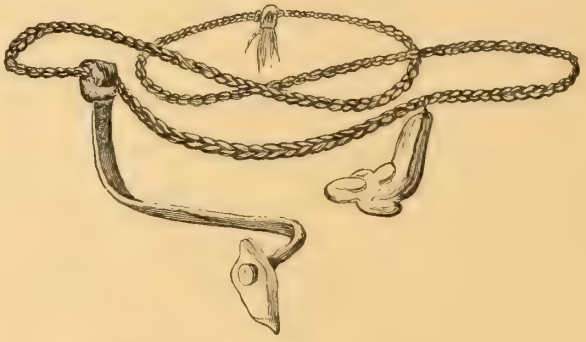
* Commander (now Admiral) McClintock, on his final search for Franklin, 1859, readily bought reindeer outer coats for a knife each, and hired four Eskimos to build a snow-house for his party at the rate of a needle apiece. (Voyage of the Fox, p. 204.)

take back with them to Repulse Bay a whole family, with their goods. Hall's sledge was now driven by *Oong-er-look*, who had a light load, but was a very poor driver, making but three and a half miles per hour. At one time he made a mistake, whipping the lash of his whip across Hall's poor face, making it sting woefully; but he quickly cut

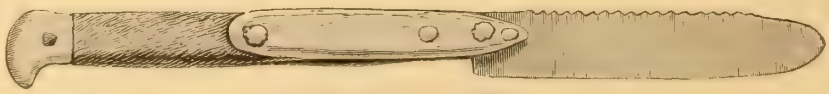
INNUIT BONE FORK, IG-LOO-LIK.



INNUIT NEEDLE-CASE, IG-LOO-LIK.



INNUIT BONE CHARM, IG LOO-LIK.



INNUIT KNIFE AND SAW.

INNUIT KNIFE.

off the end of the lash, and seemed very sorry for the harm done. Soon after this accident, a warm fur cap was made up for Hall by one of the Tern Island women. Among other presents to him, which were not a few, were "bone charms," held in high esteem, and a bone-handled knife, which was connected with the sad story of some Cumberland Inlet natives, whose boats had been crushed in the ice, when

nearly all of them were starved to death. The knife had been used to scoop the brains out of the skulls of those who had been murdered to preserve the lives of the rest. Finding that *Ou-e-la* seemed determined to take back with him to Repulse Bay the family with whom he had been bargaining, Hall at first resolved to make his own quick return without him, by taking *E-nu-men*, a native whom he had engaged on Tern Island, as the driver of a full team for a sledge made of *kow*, with just enough food for six days. He could thus hope to get back in time to leave Repulse Bay for King William's Land by the 1st of April. *E-nu-men* agreed to go on as fast as he could drive, leaving *Ou-e-la* to come as he pleased. But as the dogs got at this *kow* sled and nearly ate it up, Hall concluded that the journey could not be safely made on a sled which might at any moment be devoured by the hungry beasts; nor could *Ou-e-la* be trusted to bring down the other dogs in season. A tremendous gale, with falling and driving snow, was a further discouragement, the snow being very soft.

On the 14th, a visit was made to Ar-lang-nuk, the spot where Parry erected his flag-staff, and then to Turton Bay. He found a pile or collection of stones where the flag-staff was deposited, and says: "On removing the snow, which only partially covered the stones, I found an excavated place in the center of the circular pile. I then lifted out several large stones, which had probably been thrown in when the flag-staff had been taken down. Then I came to disintegrated limestone of such small size that one could hold fifty or sixty pieces in one hand. On removing a mass of this, I came to chips and fragmentary pieces of the flag-staff. After digging down two feet, I came to where the limestones were frozen solid, thus preventing any further research downward. * * * Could I have dug down into the

frozen mass of limestones, I doubt not I could have found the bottle containing the written document which Parry executed and deposited there. * * * The piles, or collections, of stones about the flag-staff spot are placed in such order as to represent the four cardinal points of the true compass. * * * There is the furrow or trench, now evidently just as distinct as when first made from the sea-coast to the flag-staff spot;—made in dragging the flag-staff from the sea to where it was raised. This furrow, made in the disintegrated limestone, is of rounded form, and from two to four inches in depth. I was greatly surprised to find this trench so perfect and unmistakable as to its cause." The name of the land at and around this spot is Koo-pra-look-too.

While Hall was visiting a place of such historic interest, he was awaiting the return of *Ou-e-la* who had been sent off a few miles to get some of the dogs, but after his return, a heavy gale still prevented the setting out for Repulse Bay. He now gathered his teams, and rising at four o'clock in the morning of the next day, he distributed the remainder of his presents and cut up his large sea-chest to give to the men to make their arrows, spears, and harpoons. A stake was then driven down, and the natives were called upon to tie to it all the dogs he had purchased, but he had now one cause of complaint—the only one named as to this people, of whom he speaks as among the kindest and most honest of their race. It was this: One dog was brought, small, earless, and poor; and on its being refused as not the one purchased, further compensation was asked for the one which was then brought forward. The additional pay was given, and this dog proved the best of the team.

Having now succeeded in the object for which this severe journey

had been made, he was eager to begin his return to the bay. But, when entirely ready to leave his encampment a few miles from Ig-loo-lik, he found that *Ou-e-la* had put on the sled a widow and her child, with all her traps; and he was proof against all expostulation as to the delay on the journey which this must cause. Hall then started with *Ook-pik* and *E-nu-men* and his family on a *kow* sled, and, quickly overtaking *Ou-e-la*, again remonstrated with him, ordering him to leave the widow behind. Succeeding by bribes in inducing the woman to stay, he finally put her off on the ice, getting the promise of several natives to take care of her return to her friends. But the loss of *Ou-e-la's* new wife proved a trouble greater to Hall than to the disappointed chief.

The travel was heavy, the *pe-to* more than once broke, and some of the dogs were continually straying off; by night an advance of only five miles had been made. The teams were then found to be made up of forty-eight dogs, eighteen of which had been purchased. But as all were not at hand, the whole of the next day was spent in going to find the lost ones. Then, four more of them escaping in the night, *Oot-pik* went back for them, while the rest of the party pressed on to Ping-it-ka-lik. Here *E-nu-men* conducted the party to a ridge of limestone, on digging down a foot into which, they found two logs of old walrus, which they lashed on their *kow* sledge. From this point he chose a route almost always inshore from that by which Hall and *Ou-e-la* had gone up to Ig-loo-lik, and on this line he crossed a bay on the west side of Fox Channel, extending fifteen miles to the south-west. Hall had not found this bay on Parry's chart, but did not consider this strange, as Parry's was a "marine survey only." From this bay he passed into a lake twenty-five miles in length, lat. 68° 45′, long. 82° W., on which lake they made their *igloo* by the side of a ridge of

ice extending as far as the eye could reach. Near it, beneath the snow, water was easily obtained, and the frozen *kow*, placed in this, was thawed in three hours.

He now experienced a renewal of the trials which *Ou-e-la* had given him on his route to Ig-loo-lik. Repeatedly on that journey he had shown a selfish disposition, especially in helping himself most freely to the best of the provision, of which his wife also secretly took a large share At Ig-loo-lik, to Hall's disadvantage, *Ou-e-la* had purchased for himself several dogs, and now, on the homeward route, he proved exceedingly careless of Hall's team, while liberally feeding his own. To this he added an increased exhibition of evil temper, the source of which was probably to be found in his disappointment in not obtaining the widow. He had cordially agreed to go on this journey for the very purpose of adding to the number of his wives, but Hall, when consenting to this, had not anticipated that he would bring down a family with all their goods. His evil conduct reached its worst on the 22d, when he took advantage of Hall's sickness from continual living on walrus-meat, to feast himself and wife more than once, refused a fair supply of food to either Hall or *Oot-pik*, and subjected the white man, in his feeble state, to the most menial services. He ordered him to bring in the snow-water for drinking, and, with other services, to put the *kow* sledge on top of the *igloo* when it was necessary to keep it from the dogs. The weak state of the invalid, with the renewed feeling that he was in the hands of a savage, induced him to submit to these orders. He says in his notes of the day, "I had great reason at times to shoot the savage down on the spot, and know not how long it may be before I shall have to do so terrible an act to save my own dear life." But he more wisely reserved his punishment until they should reach the ships.

E-nu-men and *Oot-pik* caught the same spirit, so far as to make inexcusable delays; and these were increased by the usual experiences of gales which bound Hall a day or more at a time, and toward the last of the journey, by the complete giving-out of the *kow* sledge, on the temperature rising to 16°. All the dogs were then attached to the large sledge in the midst of a furious snow-drift. They were showing their faintness for want of food by their tails standing straight out, instead of curling over their backs. As the result of all these causes of delay, the speed was never more than three miles per hour, and generally less. On the 24th, however, they had struck the land, from which their course was nearly direct to the head of the bay; on the 31st, they again sighted the ships.

This journey for dogs had cost Hall fifty-two more days of precious time, during which his sufferings appear to have been borne with his usual fortitude. He now found that his proposed journey to King William's Land was again utterly arrested. Two months before, when he had his men seemingly secured, the captains' plea had been that they could not spare the dogs. He had now returned from Ig-loo-lik with his own full team; but the whaling season is open, and he is behind time; they cannot spare a man. Hall could punish *Ou-e-la*, as he now did, by seizing all his dogs and holding them until he had given penitent pledges for future good conduct. But it is not surprising that for a number of days he lay sick and almost hopeless in his *igloo*. His feelings, however, and his relations to the masters of the vessels will be best learned from the following letter, addressed to one of them at this time:

My Snow-House Encampment,
Repulse Bay, April 12, 1867.

My Dear Sir: Your note of this date, soliciting my company on board your vessel to tea this evening, has been received. I thank you for this kindly

request, for by it I judge, if my heart is not amiss, that you did not really intend to wound my feelings, and do me and the cause I represent the injustice you did on board the Glacier last Friday evening. Allow me to state that I am not aware of ever having entertained for a moment any thought to injure your feelings in any way. The very nature of the mission to which I have devoted the last seven years of my life has led me to do all in my power to get to King William's Land and its neighboring lands as soon as possible, and, therefore, I have never swerved from this principle, which has been to do all in my power to live on good terms with every man, that I might have his co-operation in accomplishing the end I have in view, to wit, the rescue of some survivor or survivors of Sir John Franklin's Expedition, whom I have believed might still be living, and that I might recover some of the journals of that expedition, and otherwise gain most important information relating to the fate of all the missing ones.

Obstacle after obstacle has been before me, but perseverance has overcome them all except the last. I have done all, as now seemeth to me, that I could do to remove it. How sorrowfully disappointed will the noble-hearted Mr. Grinnell be, and the thousands of good hearts of our countrymen, and of other portions of the civilized world, when they find that I have been obliged to turn back just when I should, and might well, push on, and quickly finish up the work before me! Believe me, captain, when I tell you that I feel in my own heart that with the renewal of your warm co-operation at once, or in a very few days, I and the previously-organized sledge party can this spring perform my purposed sledge journey in season to be back here the latter part of June; and that by your thus doing there will be no occasion for organizing another party of like kind hereafter. If you knew how deeply I regret the withdrawal of your helping hand, just at the moment when, as I feel, it is most needed, I am sure you would extend it again without a moment's delay. I pray you consider this whole matter, not as mine alone, but as Mr. Grinnell's, and the thousands who have their eyes upon me, and feel a deep interest in all that pertains to Sir John Franklin's lost expedition.

Excuse me, captain, if I am not there to tea, for really I feel so overwhelmed in grief at my disappointment in not making the sledge journey for which I have so long been preparing, that I am sure I could not contribute one jot to any one's social enjoyment.

Most respectfully,

C. F. HALL.

Chapter XJ.

JOURNEY TO CAPE WEYNTON AND WINTER OF 1868.

CHAPTER XI.

ANXIETY FOR THE SAFETY OF THE CACHE MADE IN 1866—HALL'S PARTY SETS OUT TO VISIT IT, MAY 1—ROUTE BY GIBSON'S COVE, WALRUS ISLAND, AND IWILLIK TO CHRISTIE LAKE—SAILS RAISED ON THE SLED—SNOW-BLINDNESS—MILES LAKE REACHED—STRANGE INNUITS SEEN—THE SEA OF AK-KOO-LEE AND POINT HARGRAVE REACHED—EXPEDIENTS TO HURRY UP THE DOGS—CAPE WEYNTON REACHED—THE CACHE CHANGED—RETURN TO BEACON HILL—A WEEK'S MUSK-OX HUNT—SURVEY OF SHIPS HARBOR ISLANDS—NATIVE SUPERSTITION—HALL'S PURCHASE OF SUPPLIES—CAPTURE OF A WALRUS—THE HIRING OF FIVE WHITE MEN—WINTER QUARTERS.

No new journey now to King William's Land! In addition to this extreme disappointment, there came upon Hall the uncomfortable remembrance of the deposit of provisions made at Cape Weynton, a twelvemonth before, which he had so fondly hoped would serve him on going out again at this very time. The safety of the cache, which had never been a certainty, now became a matter of deep concern from the accounts received from the whalers of the conduct of the Pelly Bay natives, who had been laying their hands on many small articles belonging to the ships, and even on the tents left on shore. There was reason, therefore, to apprehend that on their return home, on which the tribe had now set out, they would destroy this advance deposit, which otherwise would be so much gain whenever Hall could renew his journey. He must go now to the Cape.

Expecting to be absent not longer than twelve days, he gained

the consent of the captains to take Frank Leonard and Peter Bayne, of the Ansell Gibbs; and Silas Norton, of the Concordia; and with these and his own two Eskimos, left Ships Harbor Islands May 1. He had a team of nineteen dogs for a large sled, the full load on which weighed 1,700 pounds; several Innuit friends assisted in loading up and starting it. Over the smooth sea-ice their first advance averaged two and a half miles per hour. Passing next over two miles of rough ice before entering Gibson's Cove, at noon they arrived at Walrus Island; at 2 p. m. they were opposite Iwillik; and at 10 p. m. completed their first *igloo*. The keen appetite of travel was satisfied by a hearty meal of raw deer-meat, coffee, and bread, with rank whale-blubber for butter; and the dogs had a small meal to prevent their running back to the islands.

The travel through the early part of the next day was under sail hoisted on the sled to assist the dogs, until the wind died away and the sun came out. The sails were then furled and the sled re-shod. Night found them under a high bluff hill on the east side of Christie Lake, the choice of which spot was made in the expectation that water could be obtained by removing some of the snow from the huge bank. In this the party were not disappointed.

The next day they were housed by a gale from the north-northwest, which had set in on the night previous, accompanied by flying snow so thick that one could not see an arm's length, nor visit the water-supply; on digging through the snow, however, Ebierbing found water within the encampment. All hands then turned out and built a *tooksoo* (outer igloo) to protect the dogs, and "preserve their fat for working service." When the gale broke, the carcass of an old Polar bear, which had been brought along for them, was chopped up and

distributed. In the evening the dome of the *igloo* was built up higher, as it was beginning to come down.

On the 4th, Ebierbing and Norton were painfully affected with snow-blindness, and again a strong breeze with flying drift prevailed; but at 1.40 p. m. the extreme end of Christie Lake was reached, and here, at the "Lower Narrows," a band of sixteen deer was seen; this excited the dogs to increased speed. At 2.55, the party crossed the very short portage between Dr. Rae's One-mile Lake and his Six-mile Lake, from the northwest end of which last they passed on to a pond, and at the end of the next half hour descended the 100-foot bank spoken of by Rae, and made their third *igloo* on Miles Lake. On the portage between the lakes, a long line of stones was found, set up on a sharp ridge of rocks, to frighten the deer and force them into a particular route. During the day, Norton, who was leading the party, had suddenly halted his team on discovering what seemed to him the foot-prints of a man; they were only some of nature's freaks with the snow. The travel had averaged two and a half miles per hour, although the snow was quite deep, and not hardened by the northward or westerly gales. The snow-blindness of Ebierbing and of Frank and Norton increased; yet the journey was resumed after having made, for use on the return trip, a deposit of one-third of the provisions under the snow bed-platform of the hut which they now left.

Strange Innuits were here discovered crossing Miles Lake, and coming at first directly toward Hall while loading up his sledge. They proved to be "*Koong-ou-e-lik*" ("Mind-your-own-business") and the big son of *Too-shoo-art-thar-i-u*, who, with three dogs, were drawing a musk-ox skin filled with the beef. The hours from midnight to 3 a. m. were spent in endeavoring to get again upon the tracks of these natives,

in consequence of the loss of four dogs which had strayed off, scenting their musk-ox meat Much hindered by the thickly-falling snow, Hall and Peter Bayne succeeded in recovering the dogs at the *igloos* where the Pelly Bay men were sleeping. No one of these showed his head, but various stolen articles were observed lying outside of the hut. Half an hour later, an advance was again made toward the sea of Ak-koo-lee on the same route which had been followed in 1866. During the day Frank and Norton, blindfolded, sometimes rode upon the sledge, at others walked behind, resting upon it; at 6.35 p. m., the party halted on the bed of a river. Thier next *igloo*, on the 6th, was made at 10.15 a. m., the travel having been made during the night to prevent snow-blindness. At 10 p. m. of the same day, again starting out, they had the misfortune to run off a steep bank 50 feet high, which threw all into consternation, and nearly broke their necks. The accident, however, delayed them but ten minutes.

On the 7th, they arrived on the ice of Ak-koo-lee, and at 4.25 a. m. Point Hargrave was reached. Ascending the heights of this point, Hall endeavored with his telescope to ascertain the possibility of pushing out from the land, but found the appearance of the ice to be entirely too rough for sledging; he was restricted to his old route on the ice-foot. The water carried in the fur-covered keg for re-icing the sled-runners failed, and the keg itself was soon afterward unfortunately lost from the sled. No one had ridden on the march of this day except the faithful cook, Too-koo-li-too, whose occupation allowed her little sleep at night. At 8.30 a. m., the fifth *igloo* was made at the west point of Cape Lady Pelly.

At 4 p. m., May 9, Hall was delighted to see by the aid of his glass, the rock beside which were deposited the greater part of the

stores placed there in 1866. At noon he had with great difficulty taken an "indifferent observation" of the sun, which gave for his latitude 67° 50′ N.; a gale with snow had prevailed during the preceding twenty-four hours. His anxiety to complete this journey and set at rest the question of the safety of the cache will be inferred from such incidents as the following: His "medicine" (treatment?) for the snow-blind—*i. e.*, tying up their eyes—had proved a charming success. He polished the icing of his sled-runners by rubbing it on with his bare hands, and found that after the first trial he could by himself easily draw Too-koo-li-too, Frank, Silas, and Peter; all three seated upon a full load. To hurry up the tired and hungry dogs he had adopted several expedients; among these, sending some of the men ahead, who, with a deer-bone and knife, at one time made strokes as though cutting off meat, and at another cut up small pieces of his Ig-loo-lik sledge and threw them into the air now and then ahead, letting the dogs see that the pieces were *kow*. This experiment succeeded even in the case of a fagged-out animal in the rear when he was transferred to the front; the poor creature's efforts to get at the much-desired meat were a great incentive to his followers. These devices were practiced at a time when the weather was very thick. At 11.10 p. m., he found himself by the side of the rock near which, in the previous spring, he had erected a little pile of stones representing Faith, Hope, and Charity, and, to his great satisfaction, on hammering loose the stones from his cache, he discovered that all had been unmolested except that a fox had eaten a portion of the *ook-gook* skin which covered the trunk, and that Arctic mice had been busily nibbling at his tent. At midnight, having loaded the sledge with all the stores of the cache, he returned to his *igloo*, when the

whole party rested until 5 p. m. of the next day. The icing on the sled-runners had proved so solid on the night previous, as to be uninjured even when the dogs were flying over the rocks of the Cape—or bluff, as he thinks this point should rather be named, as "it is no cape at all, but simply a little hill rising above the low snow-clad coast."

Hall could not forget the necessity of having a cache certainly awaiting him on the first renewed advance which he could make toward King William's Land. It marks an indomitable will and faith in his final success that, although disappointed in the three preceding years, he should again deposit at a distance from him, such valuable stores to await the issues of a fourth twelve month. His purpose at this date was to leave the greater part of the stores at the first place on the coast where he could find loose stones to cover them; he felt satisfied they would be safer at such a place than at the Cape, for he had learned that his apprehensions of the Pelly Bay men were well grounded.

Happily he found a spot seemingly every way suited for the purpose. His notes, with their usual precision, record this location of the deposit: "Cape Weynton, N. 62° E. (by compass): Range of hills in which deposit was made running S. 45° E. and N. 45° W.: Deposit made near the face of hill, thirty-three of my paces from a little pile of stones on top of a rock."

The Return Journey occupied, in all, the days from 11 p. m., May 10, to 11 p. m., May 17. Hall arrived at Beacon Hill at 6.30 a. m. of the 17th, and at Ships Harbor Islands at the date last named. The notes of this journey, although they record the usual details, present no very special items of interest, except the appearance of a much

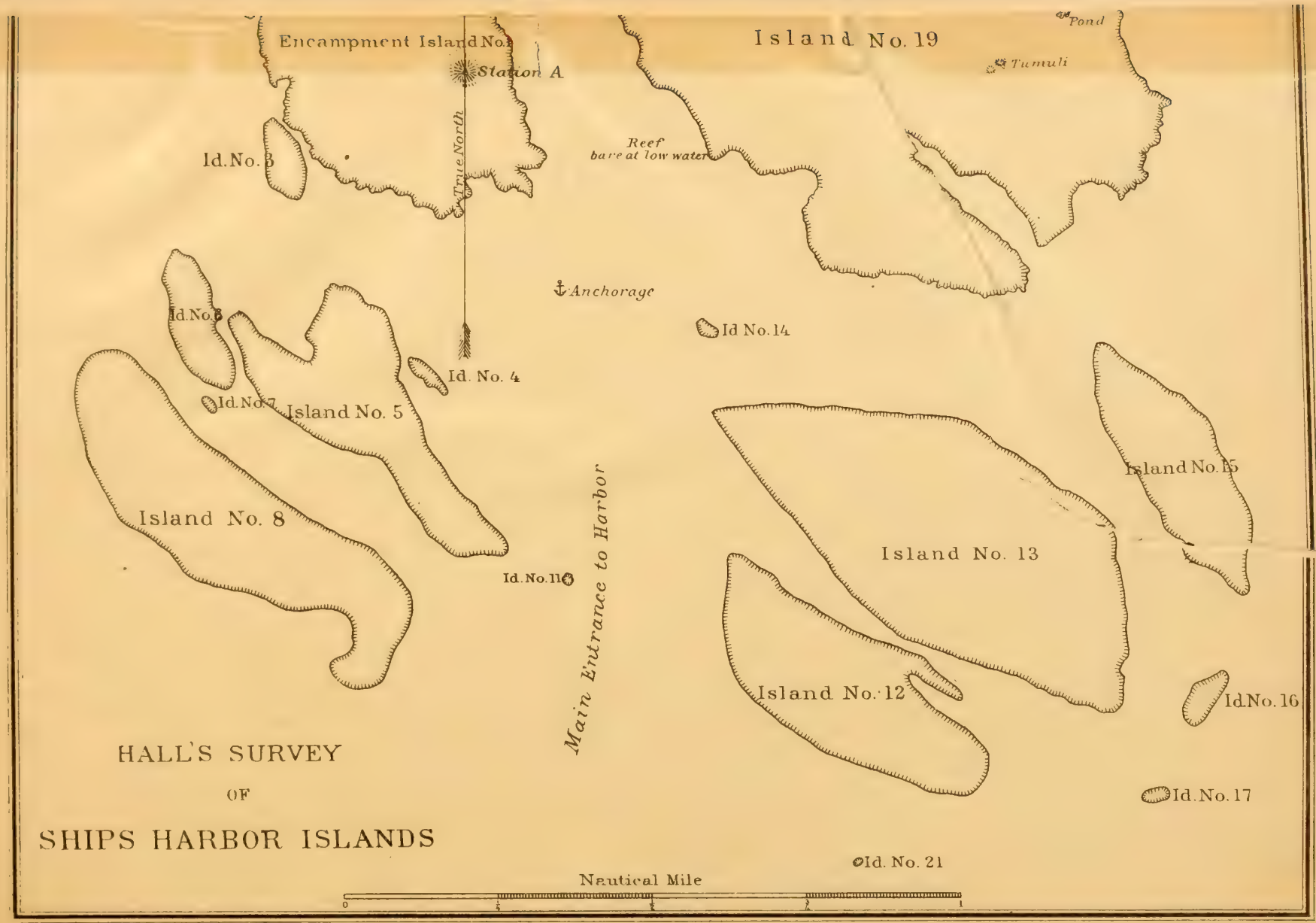
swifter and more comfortable advance than on the outward trip. The state of the weather, the condition of the ice, and the lightened sled were all in favor of the return. At the *igloo* where, on his journey out, Hall had recovered his straying dogs and found the scattered articles and the Pelly Bay men, he had again a sight of these natives, and purchased from them some musk-ox meat. Game had been scarce, and the dogs more than once unusually hungry. The deposit made at their third *igloo* in going up, they now found ripped up by the wolves, and the musk-ox meat was all gone. At Beacon Hill, Frank, (whom Hall the least excuses as his "lieutenant and the responsible party"), together with Norton and Peter, left him and his two Eskimos to get forward to Ships Harbor Island as best they could. Captains Potter and White, with their usual courtesy, sent out to Beacon Hill an invitation to breakfast with them on board ship, where he found himself again comfortably at home.

After a week's rest from this trip, he started off on a musk-ox hunt. His party was made up of Captains Kilmer and Baker, with seven native men and Too-koo-li-too. The hunting-grounds were above Miles Lake; the outward journey and return made 220 miles of travel. Forty musk-cattle were seen and a large number of deer, as well as of marmots. Twenty-seven musk-oxen, seven deer, and five marmots were killed, and the party drove home well satisfied with their three fully-laden sledges, drawn by forty dogs. They had been absent from the ships eight days, during part of which Captain Kilmer had been affected with snow-blindness, making his journey by walking at times behind the sledge, and at others, riding on it, but still doing good work on the hunt.

No notes are to be found of Hall's occupations during the first

nineteen days of June; and the same remark is, unfortunately, true in regard to a large part of the remainder of the year. The record, therefore, which closes this chapter, being made up in part from fragmentary memoranda, will necessarily be brief. It has not been found possible to determine whether he intermitted writing his journals, or whether they were written and afterward lost. The precision with which he had up to this time jotted down the minutest details of his work and its surroundings, induces the belief that he must have written out his notes of the occurrences of the long period from June to February of the next year. On the other hand, it were not a forced inference which might be drawn from his fearful disappointments in the preceding spring, that he did not renew the journalizing which had so often heavily tasked his energies and health. But, again, it is to be remarked that thus far the utmost care appears to have been taken by him of every paper and book; deposits of these being made when moving from place to place, the bearings of which deposits were noted and put into the hands of faithful persons who might find and take to the United States an account of what work he had done, should his own life fail; and, still further, that, when on a subsequent sledge journey, a few of his notes were scattered by the wind, he carefully recorded the fact. The following are the chief incidents occurring within the summer months, which have been found within the occasional journalizing seemingly practiced.

Returning from the musk-ox hunt, he took up his residence on one of the islands near the ships, which were eagerly looking for their release from the ice; and during the latter part of the month he was again busy in surveying, making observations, and studying his Arctic books. From prominent points he daily took sextant angles, meas-



HALL'S SURVEY

OF

SHIPS HARBOR ISLANDS

ured his base-lines, again sketched the coast-line, and collected much material for its further delineation. For the benefit of his friends the whalers, he made a special survey of the group known as Ships Harbor Islands, to which reference has been more than once already made. Finding that when his compass was carefully placed in position and was undisturbed, the needle still shifted in a very short time from four to five degrees, he made for himself a rough instrument, which, he says, answered the purpose of a theodolite. The draughtsman who made the accompanying map has found that the observations made by this instrument agree well. His work was uncomfortably interrupted by the frequent occurrence of rain-storms, one of which continued throughout five days. It cleared off the snow from the land and formed pools of water upon the ice of the bay.

The natives for the most of the time were scattered: some were at Oo-gla-ri-your Island hunting deer; others on the land fishing for salmon. *Mam-mark*, who had often made one of his party, died before the month closed, among her friends who were sealing on the ice. Hall's cordial intercourse with the whalers had been promptly renewed, frequent visits being exchanged between ship and shore. Several of their boats' crews had been encamped on Beach Point for some weeks, having been prevented by the ice from getting down the Welcome to Whale Point. When some of these crews had come up to their ships for supplies, and found, after a weary tramp over the ice, that their captains and nearly all the natives were absent sealing, Hall cheerfully assisted them by loaning his own sledge and dogs to take back provisions to the needy.

On the 3d of July, a party of Ig-loo-lik natives, numbering ten men, twelve women, and twenty-seven children, came down to

visit the ships; among them Hall recognized many of the friends made on his visit in the spring. His former impressions of the dangers through which he was passing from the superstitions of the Iwillik natives was strengthened now again by Too-koo-li-too, who said that the wife of *Oot-pik* attributed the death of Queen Emma to the fact that his own Eskimo, Ebierbing, had caught a certain kind of seal. *Ou-e-la* himself had said the same thing. Hall writes of this: "No wonder our lives have been in danger much of the time while living with these Iwillik people. I knew long ago that they thought me the cause of the death of *Shoo-she-ark-nook* and *Ar-too-a*, but not until now did I know that the death of one of *Ou-e-la's* wives was thought by them to be caused by Ebierbing. It seems that the wife cleaned the skin of Ebierbing's seal of its hair and blubber. *Oot-pik's* wife declines to eat any of our seal-meat, abundance of which we have in our tent, because he was the one who killed the seals. She had been told by the Iwillik Innuits not to eat any of any seal of Ebierbing's killing, for if she did she would die."

On the 4th, Hall dined on the Black Eagle with the masters of the ships in the harbor, and the national flag was displayed from the mast-head of each vessel and from his own *tupik* By the 7th of the month open water could be seen to the southward; it extended itself by the 9th above Oo-gla-ri-your Island, now named by the whalemen, Hall Island. On the night of the 10th, ice of the thickness of common window-glass formed on the pools of water of the open spaces amid the sea-ice near the shore, although Hall's thermometer stood at 40°. Mosquitoes had made their appearance as early as the 4th.

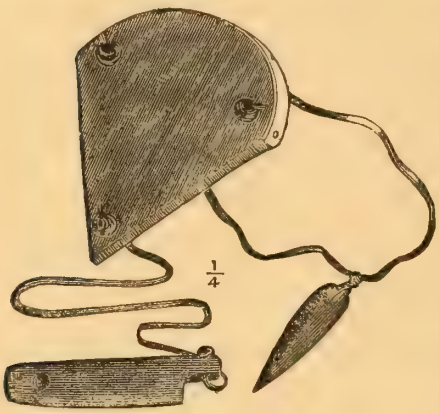
On the 24th, the steamer Nimrod, from St. John's (Capt. E. Chapel),

came into the harbor, having on board his brother, Capt. Christopher Chapel, and thirty others, who had been picked up on the ice of Hudson's Strait, near North Bluff, where their ship, the Pioneer, was crushed. From the Nimrod, Hall obtained a heavy cotton sail and 500 pounds of sea-bread, in payment for which he gave an order on his steadfast friend in New York, Mr. Grinnell; for a number of useful small articles he gave in return deer skins and meat. From an English vessel, which came in, August 2, he procured a number of hatchets, knives, saws, powder-horns, daggers, and smaller articles, for his future trading, paying for these with 248 pounds of his bone, valued at $1 per pound. He received a present of a Nautical Almanac for the year 1868.

From the whalers already named and from others coming in, he completed his purchases of provisions and stores for the coming year and for a new journey; among his latest supplies were those from the schooner Era, commanded by Capt. G. E. Tyson, afterward one of the officers of the United States steamer Polaris. His indebtedness on these last accounts amounted to $455.06, the value, as he estimated it, of the remainder of his whalebone on the Ansell Gibbs. It must be said in justice to him that his purchases and his orders for payment were made in good faith, proof of which is found in a letter from Mr. Grinnell, dating after the return of the whaler, which letter acknowledges the receipt of monies on Hall's account from Captain Kilmer, of this ship. Each of the captains, while they remained in Repulse Bay, made him valuable presents, including some useful books.

On the 13th of August, he went over to Pi-tik-tou-yer, to remain there for the purpose of catching whales. He found the natives living in some twenty *tupiks;* but a few days after, most of the men moved

off to Lyon's Inlet to hunt for deer, some going by land from the head of Haviland Bay and others by boats through Hurd's Channel. Hall sent one crew in the Sylvia and another in the Lady Franklin to the east side of the bay to hunt deer, but they soon returned completely drenched with the rains. A second crew sent out for a whale were equally unsuccessful, and the women and children on shore, numbering twenty-eight, who had been depending on him for food, could receive nothing except some bread and the walrus-hide given him by Captain Tyson for dog-food. He then sent some of the white men who were with him on another deer-hunt, and, while waiting their return, distributed to the hungry people all the provisions he had, and then returned to his old place on the island, taking with him *Ar-mou* and his family, one of whom was sick. Two days afterward, his party returned with two deer, and one of the Whalers having caught a whale, the necessities of the Innuits were relieved. Two of their well-filled boats had sighted the capture from the head of the bay, and hastened down to feed on the skin. Hall towed the carcass on shore for dog-food. He found that the dogs had been eating the bodies of some of the Innuits, who had been insecurely buried.



HALL'S BOAT-LOG.

On the 1st of September he again took up his residence at Iwillik, from which place he made vigorous efforts to secure whales or walrus, but the stormy weather forbade success; the southeast wind at times driving the ice in upon the shore, and a northeaster at other times

clearing out the harbor. The snow was beginning to fall and the ice rapidly formed to the thickness of half an inch.

On the first favorable day for walrusing, he went out with some of his men, and after a long fight secured one walrus. Four had been sighted lying asleep on the ice; but at the first attack the iron thrown by *Ar-mou* struck only the folds of the hide of one animal and gave the alarm by which all escaped. Later in the day, Antoine, a Portuguese man of Hall's party, threw an iron into another walrus; but his line fouling, he was compelled to cut it, and on Ebierbing's getting into the bow to throw another weapon, he was caught by the line and knocked overboard, escaping by a long jump to the ice. Coming up to two other walruses, the crew fastened the harpoon in one which turned fiercely to attack the boat with his tusks, when a well-directed rifle-shot put an end to the fight. The carcass was towed to the head of Gibson's Cove, and there cut up and cached.

On the 17th, he went into winter quarters two miles east of Beacon Hill. It seems certain that he had at this time with him five men, whom he had hired from the ships, whose names, so far as can be learned, were: Frank Lailor, of the Glacier; Peter Bayne, of the Ansell Gibbs; and Pat Coleman, Antoine ———, and John S. Spearmin, from some of the other vessels the names of which are not given. These men had been already in his service during the month previous, as will be inferred from their having taken part in the deer, walrus, and whale-hunts. No executed contract has been found, but from a blank rough draft appearing to have been drawn up in August, the following terms of service and compensation are gathered: The men were to be hired for one year, or for a longer period if no opportunity should offer within the year for their return to the United

States. Their services were to be of any kind that Hall might require and deem most essential, and they were well informed that their labors would not be light or their dangers small, and that the preservation of their lives would oftentimes depend upon their own exertions, as their food and clothing must be acquired from the icy seas and the wild hunting-grounds of the north. The party of the second part (for the contract was evidently with each man under the approval of the captain of his ship) agreed that in consideration of $500 per year, he would render the services required of him with strict obedience to each and every order of his commander, and would receive such a recompense as he would fairly deserve for faithfulness, energy, and honest devotion to his work. But neither service nor pay were to be continued longer at the furthest than to the date from which a passage could be taken on a good ship from Repulse Bay in the Fall of 1868.

From the time of his going into winter quarters, and throughout the following months of October, November, and December, and the first month of the year 1868, Hall seems to have kept no continuous journal. His provision-lists during these months are made out for eight persons at the encampment, showing that the five white men and Ebierbing and Too-koo-li-too, with himself, made up the party. The lists contain in detail the items of Arctic sustenance—of deer necks, heads, ribs, and belly meat, backbone and legs, with *tood-noo*, walrus-meat and blubber *muk-tuk*, and a small quantity of salmon. This provision, in addition to what he drew from the stores received from the whalers (which included a few cans of preserved meat, beef and mutton, with a little dried fruit), would seem to have been ample for the necessities of life; the footing up of his lists for seventy-three days

being 1,637 pounds, or an average per day of about 22 pounds for the party. Up to the first week in November, his fragmentary notes show that fifty-one deer had been killed. He trained his men to hardships and busied himself with new plans. He had with him packages of the New York papers, and particularly the Journal of Commerce, in which his own letters to the United States had been more than once published. His friend Mr. Grinnell, who had sent out these with his renewed supplies, had expected him home in September. The letters of friendship from Mr Grinnell and from his daughter Sylvia had informed him that a special ship would have been sent for him, had it not been known that at least two whalers were near him in the bay. But these letters also advised him that, from what he had already written home, much anxiety was felt among his friends not only in the United States but in England to hear more of Franklin's men. Hall determined to endure another Arctic winter, and then, if possible, strike once more for King William's Land.

Chapter XJJ.

JOURNEYS TO THE STRAIT OF FURY AND HECLA AND TO LYON'S INLET, AND FOURTH WINTER.

FEBRUARY, 1868, TO MARCH, 1869.

CHAPTER XII.

HALL PURPOSES TO VISIT THE NORTHERN PART OF MELVILLE PENINSULA—REASONS FOR THIS JOURNEY IN PLACE OF ONE TO KING WILLIAM'S LAND—THE INFORMATION FROM THE NATIVES OF A MONUMENT AND TRACES OF WHITE MEN SEEN THERE SINCE 1863—PURCHASES THE FEW DOGS STILL ALIVE AMONG THE NATIVES—HIS PROVISION-LIST FOR THE JOURNEY AND ARTICLES OF BARTER—LOSES SOME OF HIS NOTES BY THE GALE—ENCAMPS ON THE ICE NEAR THE OOGLIT ISLANDS—CONVERSES WITH THE NATIVES—VISITS PARRY BAY WITH KOO-LOO-A—FINDS A MONUMENT—DIGS IN VAIN FOR THE CACHE—FINDS THE REMAINS OF A TENTING-PLACE ONCE OCCUPIED BY WHITE MEN—DISCOVERS GRINNELL LAKE AND BREVOORT RIVER—VISITS AMHERST ISLAND—RETURNS TO TERN ISLAND—HOLDS FURTHER CONVERSATIONS WITH THE NATIVES—RECEIVES SEVERAL MAPS DRAWN BY THE ESKIMOS—VISITS GIFFORD RIVER TO FIND ANOTHER TENTING-PLACE—RETURNS TO REPULSE BAY—SALMON-FISHING AND DEER-HUNTS—MUTINY OF ONE OF THE FIVE WHITE MEN—LOSS OF LIFE—CAPTURE OF A SECOND WHALE—JOURNEY TO LYON'S INLET—SURVEY—DISCHARGE OF THE FOUR WHITE MEN—HALL DRIES VENISON AND PREPARES PEMMICAN IN HIS OWN IGLOO—PLANS FOR A NEW SLEDGE JOURNEY TO KING WILLIAM'S LAND.

Before the winter of 1867–'68 closed, every preparation had been made for renewing the advance of the preceding year. But Hall now felt himself suddenly and unexpectedly called to that part of Melville Peninsula which borders on Fury and Hecla Strait. His reasons for making this journey in place of going to King William's Land, were in his own mind sufficient to induce the change; they are here given in nearly the language of his own notes, unimportant details only being omitted.

In the latter part of October, 1867, *Papa-te-wa*, a brother of *Armou*, had told him that a few years before, an Innuit had seen, some-

where in the neighborhood of Ig-loo-lik, two stone buildings, "not such as Innuits ever made, but quite large, long, wide, and high." To this story, which appeared quite improbable, Hall at first paid but little attention; but a few days after this, Ebierbing showed *Papa*, on Parry's chart, the country around Ig-loo-lik; and as soon as the native understood the chart, he pointed out the place where these buildings had been found, and gave the name of the Innuit who had seen them when on his deer-hunt. It was on the south side of the strait, about half way between Cape Englefield and Amherst Island, and the buildings, he said, were on a low shelving shore near some bold highland. *Papa* said of the Innuit, *Kia*, who had seen them, that he was a man who would never lie. He gave as a reason for *Kia's* close observation of every object in that country, his consciousness that his own life had long been in perpetual danger from the relatives of one who had been slain by one of his kinsmen; for, according to Innuit belief, the soul of the slain can never rest until some near relative of the slayer shall pay the debt with his blood. Of *Papa* himself, Hall says that he was a good-natured, intelligent, and truthful native, who had lived five years near Ponds Bay and many more at Ig-loo-lik.

Frequent conversations were, therefore, held with *Papa*, and with his friend *Ik-ku-mer*, to learn everything on this new and interesting subject; and in the early part of February following, Hall sent Ebierbing and Frank Lailor to a native village, twenty miles distant on the ice, to ask that some of the natives of Ig-loo-lik who were there would visit him. They returned with *Quasha*, his wife, and *Eek-choo-ar-choo*, whom Hall notes also as "Jerry"—a name probably received from the whalemen. From these natives he learned with further interest that within the past three years they had seen near Ig-loo-lik two

white men, "one a tall man, the other considerably shorter." On further close questioning them, his belief in their story was confirmed by the seeming consistency of their statements. They had seen Dr. Rae at Pelly Bay seven years after his first visit to their country, and had remained near Iwillik seven winters and a half, after Rae went home from his second visit; after which they went to Ig-loo-lik, and two years *later*, saw the *kob-lu-nas*. Some additional particulars which they gave strengthened their story; among these was an account of a time of suffering by starvation which they had experienced. Hall says that their statements, with other news gained from the Innuits, gave him inexpressible joy, "for it brought the story down as late as 1864, at which time some of Franklin's companions were alive near Fury and Hecla Strait." This was his strong hope.

A short time afterward, he sent a large load of walrus-meat to relieve the suffering people of this village, numbering fifty-five persons, and heard further from them that four years after Rae's last visit a ship's beam, painted black on one side, and a long and large mast, had been seen on the east shore near the southern terminus of Committee Bay. The Pelly Bay men also were reported as having seen since Dr. Rae's departure, on the shores of Simpson's Peninsula, a stone monument having on its top a thin stone pointing toward Ig-loo-lik. Not satisfied without making every effort to learn the reputation in which *Quasha* and his wife were held for truthfulness, Hall now made close inquiries for this of *Ar-goo-moo-too-lik* whom he had long trusted, and sent to the village to question the natives on the same point. The replies were every way satisfactory, except that *Quasha*, in his younger days, had been known as fond of telling yarns; his wife was considered entirely truthful. Still later in the month, Ebierbing and Too-koo-li-too visited

Quasha's wife to obtain further news and the minute particulars of the accounts already received. On their return Hall wrote: "The news relative to there having been seen white men near Ig-loo-lik between 1849 and 1865, proves to be true beyond all question in my mind. Certainly I am bound at once for Ig-loo-lik and Fury and Hecla Strait. There is not a shadow of doubt about my duty, which is to fly to the rescue of the probable survivors of Franklin's Expedition."

It will not be forgotten that this *rescue* was the chief one of the two objects named in all his appeals and lectures from the date of 1860, when he had begun his training for these expeditions by tenting out on the hills of Cincinnati. He now yearned to be off to the strait, which he calls "a hallowed spot." *Papa* told him that he and all the Ig-loo-lik natives believed the accounts which have been now given, and that some of the survivors *might be still found alive;* he was willing to assist in the search. Hall appears to have been impressed with the great probability that all of Franklin's party had not continued on the hopeless route to Back's River. His hopes of this resulted from reflections like those lately expressed by Dr. Rae, as found in "Smith's Arctic Expeditions, 1878." Rae says:

> What struck me at the time, as it does still, was the great mistake made by Franklin's party in attempting to save themselves by retreating to the Hudson's Bay territories. We should have thought that the fearful sufferings undergone by Franklin and his companions, Richardson and Back, on a former short journey through these barren grounds, would have deterred inexperienced men from attempting such a thing, when the well-known route to Fury Beach—certainly much more accessible than any of the Hudson's Bay Company's settlements, and by which the Rosses escaped in 1832–'33—was open to them. The distance from their ships to Fury Beach was very little greater than that from where Ross's vessel was abandoned to the same place, and Franklin and his officers must have known that an immense stock of provisions still remained at the place where the Fury was wrecked, and where, even so late as 1859, an immense stock of pre-

served vegetables, soups, tobacco, sugar, flour, &c., still remained (a much larger supply than could be found at many of the Hudson's Bay trading-posts); besides, the people would have been in the direct road of searching parties or whalers. The distance to Fury Beach from where the ships were abandoned, roughly measured, is, as nearly as possible, the same as that between the ships and the true mouth of the Great Fish River, or about two hundred and ten geographical miles in a straight line. Had the retreat upon Fury Beach been resolved upon, the necessity for hauling heavy boats would have been avoided, for during the previous season (that of 1847) a small sledge party might have been dispatched thither to ascertain whether the provisions and boats at the depot were safe and available. The successful performance of such a journey should not have been difficult for an expedition consisting of 130 men, who, in the record found in 1859 by McClintock, were reported all well in the spring of 1847.

[In connection with these views of Rae, and in recording Hall's enthusiastic expectations, with the repeated and uniform accounts given to him of some white men having been seen on the peninsula later than 1854 (together with their monument and tenting-place, which he did discover), the questions at this point of the Narrative seem irrepressible;—"Is it possible that some of Franklin's men did make their way eastward to Melville Peninsula?" Will the expedition of 1878 from New York, under Schwatka, or some future explorer lighting on a cairn, ever give the world some answer to this inquiry? for it seems by no means certain that all of the 105 remained under Crozier's leadership toward Back's River. Will the Franklin Records ever be recovered for England and for the world?]

During the first three weeks of March, Hall busied himself in making his preparations. After providing for the four white men whom he would leave at the encampment at Talloon, he made his usual deposit of records and stores. An epidemic had again visited the dogs, and his own team had been reduced from twenty-three to eight. Some having died from the disease, he had killed others to

prevent its spread. He succeeded, however, in securing five from the Innuits, the *only dogs except two or three that remained alive about the bay.** In return for the information he had just received and for other past services, he added useful articles to the compensation which he gave for these dogs.

On the 23d, he left his encampment, having for his companions Frank Lailor, *Papa* and his wife and little child, Ebierbing, and Too-koo-li-too. His provision-list was made up of—bread, 308 pounds; pemmican, 252 pounds; raw venison, 100 pounds; pork, 17 pounds; sugar, 25 pounds; coffee and tea, 10 pounds; molasses, 39 pounds; tobacco, 13½ pounds; seal-blubber, 40 pounds, *Ook-gook* oil, 50 pounds, partly for fuel;—walrus-hide, 463 pounds, and whale-tongue, 266 pounds, for dog-food. Expecting to meet his old friends at Ig-loo-lik he counted on renewing his supplies at that place.

His list of articles for barter and for presents included 50 knives;

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* The peculiar nature of the Eskimo dog disease was closely noted in the experience of the English Expedition of 1875. The following is taken from the report of Fleet-Surgeon B. Ninnis. (Parliamentary Paper, C. 2176, 1878):

"Twenty-five apparently healthy dogs were embarked on board ship in the middle of July, 1875. The number subsequently increased to twenty-seven by the addition of two young ones. We were given to understand that feeding twice a week was amply sufficient; that the worst possible personal treatment was too good for them, and meat in any stage of decomposition a perfect luxury to their fastidious palates.

"Seven and twenty animals, confined to a space which the utmost attention was scarcely sufficient to keep habitable, constantly quarreling and fighting for dear life, exposed to sun, dew, snow, and wet generally, and without a chance of a run ashore—it was not to be wondered at that they began to show signs of disease. The first attacked was a young female twenty-five days on board, and she had a fit and died in thirteen days. Others became attacked. One was summarily shot; one ran away, and was seen no more; two were accidentally drowned; seven died from the disease; six recovered; *one* died mad.

"Of the whole number, twelve only were under medical treatment; one had rabies and died; one so far recovered as to have two litters of pups, and then died ten months after her first fit and two or three days after her last litter; two fell into the water when in fits and were drowned; two died notwithstanding everything that was done to cure them, and six recovered and were landed at Disco. * * * The treatment found most beneficial was calomel, followed in some cases by croton-oil and solution of morphia, the best of water, and good food. They were not kicked or cuffed, and they behaved as sociably and decorously as if brought up in a cottage."

500 percussion-caps; a liberal supply of ball, powder, and shot; 1,500 needles, and 80 thimbles, besides combs, looking-glasses, buttons, beads, brass rings, fish-hooks, and files, &c. The experience of his visit of the previous year to Ig-loo-lik had taught him something of the value set upon the smallest of these articles, even upon scraps of iron and wood.

On arriving at the head of Haviland Bay, he crossed the land, taking nearly the same route with that followed the year before, and on the 30th made his seventh *igloo* of the journey on a lakelet just above Lyon's Inlet. While here engaged chiseling a hole through the ice, he had the lamentable misfortune to see *Papa* flying in full chase after some of his freshly-written notes, which, on unloading the sledge, had been suddenly swept out of their fur-cover by a furious blast of the gale. *Papa* returned in three-quarters of an hour; but, after chasing the books over the lake and beyond the rising ground, he had lost sight of the jottings made since leaving Talloon. The flying drift buried them forever.

When starting on the second day following, bridle-drags were prepared for the sledges, as they had now to descend a steep hill into a river-bed; a moment after, *Papa* ran the sled Erebus upon the point of a sharp rock which knocked off some of the mossing, whereupon he angrily got a large stone and pounded the point to powder. There was, however, a delay of but five minutes. On the 2d, they reached Fox Channel, and made their tenth *igloo* at Oo-soo-ark-u; and here Hall remained one day to please his companions. He took observations for position, and left a deposit of 103 pounds of bread and 64 pounds of pemmican for his return journey. In consequence of heavy and rough ice met with on the 4th they struck offshore, and,

when reaching the latitude of the north end of Am-i-toke, turned to the westward and encamped near it. They met fresh foot-prints seemingly of two men and a dog, and supposed that the men had been walrusing at the north on the drift-ice, which, being carried away had brought them to this point before they had a chance of gaining the firm ice. On the 6th of April, the thirteenth *igloo* was built at a point called by the Innuits King-me-toke-big, not far from the Oo-glit Islands, and the day following, when within a short drive from these islands, an Innuit who had been out all night on his watch, came up to them with his full sealing-gear. He proved to be an old man whom Hall had never before seen, but he gave some information as to the number of natives on the islands, and at Ping-it-ka-lik and Ig-loo-lik. Coming to the islands, Hall's party saw standing on the hill-top a row of Innuits watching them; *Papa* fired off his gun, and the old man, *Too-loo-arch-oo*, cried out to them at the top of his voice, "Mitter Hall, Mitter Hall!" The natives of the village, when they caught the words, answered with loud cries, set to dancing, and offered as warm a reception as on the previous year. When they crowded into the quickly-built *igloo*, they were at once met with inquiries as to the accounts of the white men said to have been seen on the Strait.

Hall remained at these islands from the 7th to the 16th of the month, partly to obtain supplies of walrus-meat for the continuance of his journey, but chiefly to get from the natives all further information he possibly could, for or against the statements he had received. On the journey he had sprained his left leg while climbing over the rough ice, and this confined him to his bed for several days. While Ebierbing went to Ig-loo-lik for dog-food, the natives employed Hall's dogs in their own service, their stock having nearly all been swept away by

disease A large number of visitors came around him, the village since his arrival having swelled its population to the number of one hundred. After questioning many of the people, at first separately and then at a time when quite a party were gathered in his *igloo*, he was further strengthened in his belief of what he had heard about the white men seen on the southern shores of the Strait. He seems to have really expected that he would soon find some of Franklin's men still alive.

The details of his conversations were written out with great care in a full journal, which was irrecoverably lost in some unaccountable way just before his setting out on the Polaris Expedition of 1871. From a partial copy of this journal, made at his request by his friend Mr. J. J. Copp, of Groton, Conn., the notes have been taken which are to be found in Paper "B" of Appendix IV. This copy, made by Mr. Copp in books "A" and "B" especially for the use of Lady Franklin, was sent over to that estimable lady just before Hall left the United States on his last ill-fated voyage. Indorsed by him "to be retained by her in trust for a time," it has been courteously returned by her niece, Miss Sophia Cracroft, for use in the preparation of this Narrative.

Some of the striking points in these conversations, which increased Hall's enthusiasm, and in his judgment justified him in prosecuting this journey, will be found in Appendix named The story may be summed up in brief as follows: Although he could not meet with *Kia*, for he had been killed by a walrus, he learned from *Koo-loo-a*, a native whom he found to be trustworthy, that when he had been hunting all around the country between Garry Bay and the northwest cape of Melville Peninsula, he had seen an *In-nook-shoo* (a monument)

on the south side of a river emptying into a bay near the Cape Ellice of Dr. Rae, and a little west of this a cache of stones, which had been opened and its stones thrown aside. It showed freshness, and was without a sign of meat having been deposited there. *Koo-loo-a* did not think an Innuit had built it, or that any native before his visit had ever gone up so far from Garry Bay. He had been with *Kia* when the latter saw the strange man. The man had a cap on his head, separate from his overcoat, which had a hood. *Kia* had kept the stranger in sight for some time, often hiding himself behind the rocks; he had also then heard the discharge of a gun.

From the time that *Kia* first gave this account to *Koo-loo-a*, it had been believed by all the Innuits in the region of the Oo-glit Islands, and they all now expressed to Hall their confidence in it. Besides such reports, others also of as strange a character were offered—of strangers having been seen in places nearer to Ig-loo-lik, and of sounds having been repeatedly heard like those from the discharge of a gun, and at places too far from the ice to have been the result of the ice cracking. The strangers had at first been taken for *Et-ker-lin* (Indians), the apprehension always entertained by Innuits in regard to whom had, at the times when the white men were seen, so frightened them, that, at every appearance, their families had been removed immediately from the place. This was the invariable testimony, as was also the description of the clothing worn and of the footprints examined after the strangers passed by. They were long and very narrow in the middle, with deep places at the heel. The tread of the footsteps was outward

Hall could not help connecting in mind the story of the ship's mast and beam on the shores of Pelly Bay, the monument spoken of

by *See-pung-er*, and the one now seeming to exist on the north shores of the Strait, as links in connection with the strange appearances of the men, their dress, and footsteps. Some of Franklin's men must, he thought, have crossed over eastward to Parry's old region in the forlorn hope of reaching, perhaps, Cumberland Inlet and being rescued by some vessel from Old England; and they might be *still alive*, for the last date of these stories was 1864.

Leaving the islands early on the 16th, with *Koo-loo-a* as a trustworthy guide, he passed by Ping-it-ka-lik, crossed from that place, over land so level and smooth, that it was difficult to tell it was not a lake, and made his first new *igloo* on Hooper Inlet, about half a mile from shore. The day following, making a fair progress across the inlet, he came to an old deserted *igloo*, in which a dead fox was found. *Koo-loo-a* built up a pillar of snow, on the top of which he left the animal erect, its tail standing straight out and two of its legs in the position for walking, in which they had been found. Tracks of the wolf, the deer, the fox, and of partridges were seen. Near the islands, at the head of the inlet, tidal action was seen to have made the ice very rough.

Their next *igloo* was built on Quilliam Creek, at the early hour of 2 a. m. of the 17th. From the head of this creek, they endeavored to shorten their route to the west branch of Crozier River, but the roughness of the land, compelling them to make zigzag courses, prevented any gain of time. *Koo-loo-a* pointed out on the southern side of the river a place where *e-ker-lū* (salmon) abound, and said that Parry had caught many there at his tenting-place.

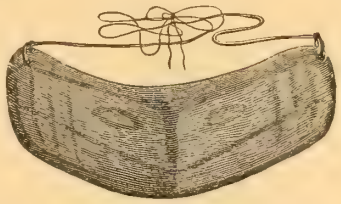
Upon Crozier River they passed through a magnificent gorge from 50 to 75 feet in width, to avoid some impassable snow-drifts in

which they put on their *rue-raddies*, (harness), helping the dogs up a very steep hill, and then descending swiftly into the river-bed; and after further delays among the rough rocks which pushed up through the ice, at 6.30 p. m. they built an *igloo* on the river. Hall immediately climbed a high peak in the range of mountains before him, from which he had a fine view of the surrounding country. On the east was an extensive plain; on the north, the high land about Hooper Inlet; and southward and westward, mountains after mountains rose in confused masses: a pass seemed to open itself about ten miles to the south.

On the 19th, the travel up the river was continued as far as the lake from which it flows, after riding on the smooth surface of which more than five hours they built their fourth *igloo* Hall named the lakelet Grinnell Lake; during the night the cracking of the ice on it sounded like continuous artillery. Not a sign of life had been seen since leaving Quilliam Creek; and *Koo-loo-a* told Hall that no other Innuit knew this route, which he had discovered when hunting.

At noon of the next day, on the western end of Grinnell Lake, they found a large open pool with no anchor-ice on its bottom rock. Salmon were swimming in it. To the little stream which ran from this lake Hall gave the name of Brevoort River. A lakelet into which it expanded being found to be covered with water with much thin ice over it, a passage was made over the land until the river was again entered, when the traveling became very fatiguing through the soft snow, which was melting under the southerly winds. Hall's limb was now so painful as to compel him to ride nearly all the time, and he could make but few observations; but his next *igloo* was made near the spot where *Koo-loo-a* "saw the tracks of white men and heard the report of a gun more than thirteen years before." The day follow-

ing they came to a frozen cascade, 15 feet in height, where the river seemed to have cut its way through solid granite 60 feet wide and 25 feet high, and a few hours afterward they passed out upon the bay, and built their sixth *igloo* on the ice of the sea of Ak-koo-lee, lat. 69° 47′.5. The next day was one of rest for the Innuits, who were suffering from snow-blindness. Hall made for them a wash of sugar of lead and laudanum. From a piece of driftwood *Koo-loo-a* made eye-shades. In company with Frank Lailor, Hall looked carefully from the top of Cape Englefield for any signs of white men, but could see none; he made his own monument on the Cape—a pile of three large stones, the lowest resting on his clay pipe. A hawk was seen, and tracks of deer, of bears, and ermine were numerous; on the ice were many regular paths worn in the snow by the bears, but no animal showed himself to the travelers The jumps of the little ermine in the snow showed that they had been full six feet each.



SNOW-GOGGLES.

Early on the 23d, most of the stores were deposited in an *igloo*, over which "a flag was left swinging in the wind to keep off the bears," when the whole company started down the coast to visit the monument described by *Koo-loo-a;* but, on his being taken sick, the visit was arrested for that day. Out on the sea was a long line of fog, showing itself to the south as far as the eye could follow it *Koo-loo-a* said there was open water there all winter, and that many walrus were caught there. Land now discovered by Hall west-northwest from Cape Englefield proved to be a long low island. *Koo-loo-a* said that bears were often killed on it while wintering under the snow.

Of this discovery his little note-book of the evening says: "On

getting to-day to the heights of land overlooking New Bay, Parry Bay, Cape Crozier, and Fury and Hecla Straits, the sight of a *New Long Island* to the westward, so carried me away that I was sweeping to the right and left with my glass before I again had a thought of monuments or other traces of the lost ones."

On the 24th, the search was made for the monument and cache. The monument was found and the place of the cache pointed out, but the latter *was covered by a huge bank of snow.* Hall thus describes the location of the monument: "On either side of the plain on which it stands is a river, and hills of delta are northeast of it. It is 100 feet above the sea, and near a hill upon the south side of the plain. The hill looks not unlike an inverted whale-boat when seen at a little distance from the northwest." While he made a sketch of the monument, Frank Lailor, with an iron snow-knife, tried to cut down through the bank to the cache, but found the snow as hard as ice.

MONUMENT FOUND BY HALL.

To leave nothing undone to find the buried cache-stones, Hall now moved down and built his *igloo* near it, and on the 25th renewed with Frank Lailor, with some assistance from Ebierbing who was suffering with rheumatism, the severe work of cutting down into the snow-bank. They all labored hard for many hours, cutting down to the depth of 15 feet with their iron snow-knives, until, as Ebierbing has lately said, "they sweated in the cold from head to foot." But it was impossible to find the cache.

Too-koo-li-too and Ebierbing, about the same time, found two tenting-places which presented strong contrasts. The first tent, the traces of which Too-koo-li-too called to them to observe, had been oblong, as shown by four stones, weighing each from 25 to 35 pounds, used to hold down its corners; rows of smaller stones were in the positions where they had served to secure the sides. The dimensions of

HALL'S SKETCH OF THE COAST-LINE NEAR THE MONUMENT.

the tent had been 9 feet by 6. Hall's Innuit companions assured him that white men must have built it. An Innuit tenting-place close by, showed the unquestionable marks of its builders by its stones being found arranged in their invariably circular form.

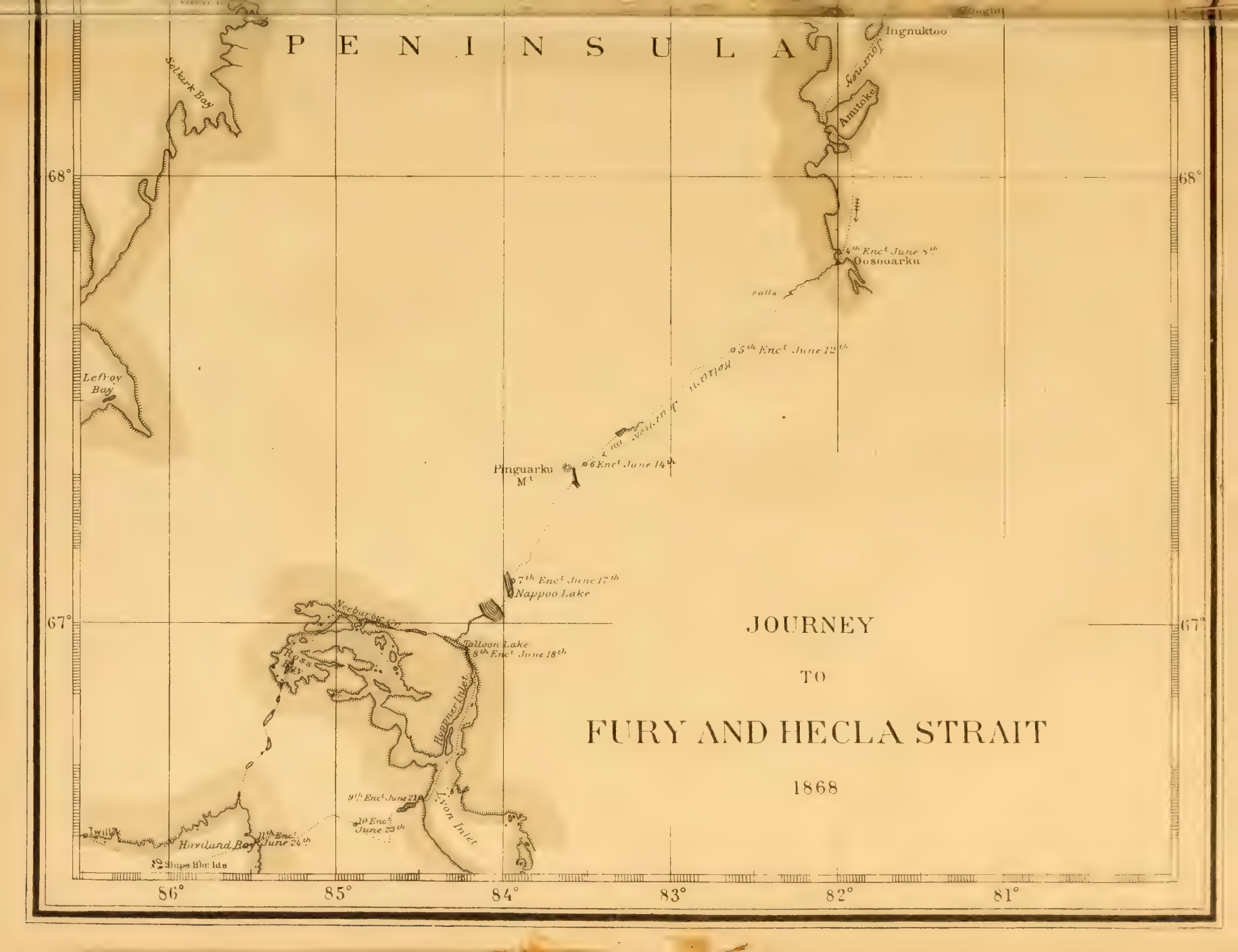
The rough notes of the two days of this visit are worth a literal transcribing, and are here given, omitting only Hall's astronomical observations, and some sketches of less importance than those shown by the cuts. The spot visited had not been reached by any previous Arctic explorer. Parry's officers were not on this western side of the peninsula, and Dr. Rae's highest point was 69° 5′ 35″ N. (Rae's Narrative, p. 128). And it may be justly remarked here that it is to be regretted that Hall's visit should have been recently discredited, and this before his full statements could be published. The latitude of his encampment here was 69° 47′ 5″ N., long. 85° 15′ W.

Literal Copy of Hall's Notes.

April 24.—*Koo-loo-a* requested to-day that I would take a look with my spy-glass in a certain direction, after we had tramped four hours over hill, lake, ravine, and through deep snows. I looked, and sighted a monument above the snow. *Koo-loo-a* and Frank took a look through the spy-glass, the former declaring that the monument he saw was at the head of a bay not then in sight. Dr. Rae could not possibly have made this monument and cache, for they both belong together; the latter covered with a deep drift every winter, and when Rae was at Cape Crozier in May, 1847, the bank of snow must have been as deep and hard as the one now there. Besides, Dr. Rae's track-chart does not show that he visited the southeast angle of Parry Bay. To-morrow morning, I remove with my party to the monument.

Koo-loo-a told Hannah that when he first saw this monument thirteen years before, it was then fresh, and now looks old. When he found it and the cache-stones under the bank, he told all the Innuits of his strange discovery. No Innuit could have made it. A hole was dug out of the rocks and something deposited in it. Afterward, the stones covering the cache were thrown all in a pile on one side, and the deposit, whatever it was, taken out.

April 25.—This morning we leave our seventh *igloo* here and move down to the monument, to make all investigations possible relating to it, and try our best to find the cache-stones buried in a huge snow-bank that lies over the steep bank of ground running alongside of the plain on the margin of which is the monument.


PENINSULA
Ingnuktoo
Amutoke
Selwyk Bay
68°
4th Encl June 8th
Oosooarku
falls
5th Encl June 12th
Lefroy Bay
Pinguarku Mt
6 Encl June 14th
7th Encl June 17th
Nappoo Lake
67°
Tallyoon Lake
8th Encl June 18th
Hepner Inlet
9th Encl June 21st
10 Encl June 23d
Lyon Inlet
Harland Bay
11th Encl June 24th
Ships Hbr Ids
86°
85°
84°
83°
82°
81°
JOURNEY
TO
FURY AND HECLA STRAIT
1868

86°
85°
84°
83°
82°
81°
70°
69°
FURY AND HECLA STRAIT
COMMITTEE BAY
M E L V I L L E
New Island
C. Hallowell
Autridge Bay
Cape Englefield
Encampment B
Cape Ellice
Brevoort River
Parry Bay
Cape Crozier
Cape Miles
C. Arrowsmith
Honeyman I.
Garry Bay
C. Richardson
Amherst I.
Iddon I.
Ormond I.
C. Griffith
Richards Bay
Grinnell Lake
Griffith Cr.
Parry Mount
Guillam Cr.
Grubb Cr.
Hooper Inlet
Iglooalik
Arlagnuk
Parry's Flagstaff
Outward Route
Pingitkalik
Ooglit Ids.
Tern I.
Neerlunakto
Return Journey
Monument made by White Men
Penlung Place of White Men

8 a. m.—Passing along frem seventh encampment toward Cape Crozier, the monument is distinctly visible with the glass. I and Frank commenced at once with our snow-shovels to cut out snow-blocks from the heavy bank just west of the monument in search of the cache-stones. *Koo-loo-a*, from his remembrance of the situation of the monument and cache-stones, has shown us where to dig.

10.5 a. m.—Hannah has found the tenting-place of white men—an oblong tent and four fresh upturned stones, one at each corner, to make fast the lines of the tent; the stones show an age since turned up out of their bed the same as monument stones.

10.30.—Joe, in searching around, has found *another* tenting-place. Frank and myself were busy raising blocks when Joe called, and then we all ran where he was, and have just made our investigations. *These* stones are in a circular form, and evidently the tenting-place of Innuits within ten to fifteen years. Hannah said if a fire-place could be found within the tent-circle then they were Innuit tenting places, and at last a fire-place was found within one of the circles—black on the back of the fire-place; a stone that had formed one side was loosened and turned up by Hannah and found black with smoke. *Koo-loo-a* found a large stone in proper position for holding the line keeping up the entrance to the tent; as Ig-loo-lik people make their tents. Joe, Hannah, and *Koo-loo-a* are sure the *oblong-shaped* tenting-place and the stones at the corners and outside row of small stones tell the truth, that Innuits never did that work. The contrast particularly striking between the tenting-place of the whites and that of the natives. A small stump of a tree found in the circle of an Innuit tenting-place, and not decayed, but white with age, showed hard life among the ice of the sea of Ak-koo-lee.

EVENING NOTES.—All day we have been hard at work cutting out snow-blocks in search of the cache-stones, but in vain. One would be greatly delighted to see the excavations and upturned blocks all around made in searching for lost cache stones. * * *

26*th*.—Joe and Hannah, being well acquainted with white men's ways, are as certain as is *Koo-loo-a* that white men had an encampment here.

Having with them provisions for two days only, Hall's party were forced to return to their sixth *igloo* First, however, he took down the monument stone by stone, yet without finding any record or sign to tell with more certainty who had built it. *Koo-loo-a* "was

the most disappointed one of the party, for he expressed honest fears that he would be thought to have told a falsehood." Yet his character for entire truthfulness had been and still remained unquestioned; Hall says he had previously "sharply-tested this man." He left the spot with the assurance that his search for the evidence of white men's having lived a struggling life in those regions had not been in vain, for they had found a monument and tenting-place made by WHITE MEN.

From astronomical observations and compass-bearings he now determined the coast-line between Cape Englefield the most western point of the Strait sighted by Parry, and Cape Crozier the most northern reached by Rae in 1847; by which survey he may be justly said to have filled up this broken line of the Admiralty chart for the northwestern part of Melville Peninsula at and below the western outlets of Fury and Hecla Strait. This was, at least, a liberal compensation for the disappointment keenly felt on leaving the spot without records or closer traces of white men.

Just before again reaching their *igloo*, *Koo-loo-a's* sharp eyes spied a hole in it, and as the tracks of a wolverine had been already seen, alarm was taken for the safety of their provisions On coming nearer, walrus-hide, meat, and blubber were seen scattered here and there on the ice; but on Hall's breaking open the door, he found that the animal had but scratched two or three little holes through the snow-platform and dragged out the articles without carrying them into its hole. A delay of one day more would probably have cost the party the loss of all their food.

Not satisfied to give up the search for Franklin's men whom he

still believed that he might find yet living, he next examined the southern shores of the Strait, and endeavored to cross to the northern coast, hoping also to make some geographical determinations there. The exceeding roughness of the ice permitted him to advance on foot only, with one companion and one dog. From the main island of a group in the mouth of the Strait he took additional observations, bearings, and sextant angles, to fix the position of the new island to the northwest of Cape Englefield On the south side of the islet on which he stood, the rock appeared to have been polished to the height of 50 feet above the sea by the moving ice-masses. The whole strait was filled with rugged ice, pack and old floe, some of the old floe pieces a mile square; one small unbroken floe was plainly of the formation of the year previous. Old floes abounded, full of hills, valleys, and lakes, nearly all denuded of snow, and covered by huge bergy pieces thrown up by pressure in the open season. The Innuits said that occasionally there is a year in which the straits are entirely clear of ice. "Parry and Lyon would have hailed such a season."

On the 30th, with the same companion, Frank Lailor, Hall visited some islets off Cape Englefield, searching again thoroughly for monuments or other signs of human beings. His next exploration was along the southern coast as far as East Cape, and from that point to Parry's Amherst Island, on which, however, he found nothing really indicating that any one had been there of late years. Three flat slate stones were seen placed on each other, with their moss side down

For a return to the Oo-glit Islands, a choice was to be made between continuing down the strait and their outward route by Quilliam Creek, the latter of which routes was taken to avoid delay, which the roughness of the ice might cause. A prompt return was

necessary, as their supplies, made up at first for fifteen days only, had now been drawn upon nearly three weeks. Finding an easy passage over the land to the creek, by the 6th of May they had rapidly followed it down, and, passing through Hooper Inlet, after some delays occasioned by the softness of the snow, arrived at the Oo-glit Islands early on the 8th, having in fifteen hours accomplished a journey of fifty-seven statute miles from their last halting-place on the ice of the inlet. On this journey the only living thing seen was a crow. They had found that the fox which had been set up on the snow pillar by *Koo-loo-a* had been carried off by some Innuit, who had substituted for it the shoulder-blade of a walrus; this dried meat was relished by the hungry return party. When coming near the Oo-glit Isles, Hall "looked out upon a long impenetrable cloud of blackness overhanging the iceless waters of Fox Channel. The wind blowing fresh from the south and the aurora actually working on the face of the blackness, made it seem, as we approached this world of blackness, as though we were going right straight into the lower regions in the literal significant sense of the word."

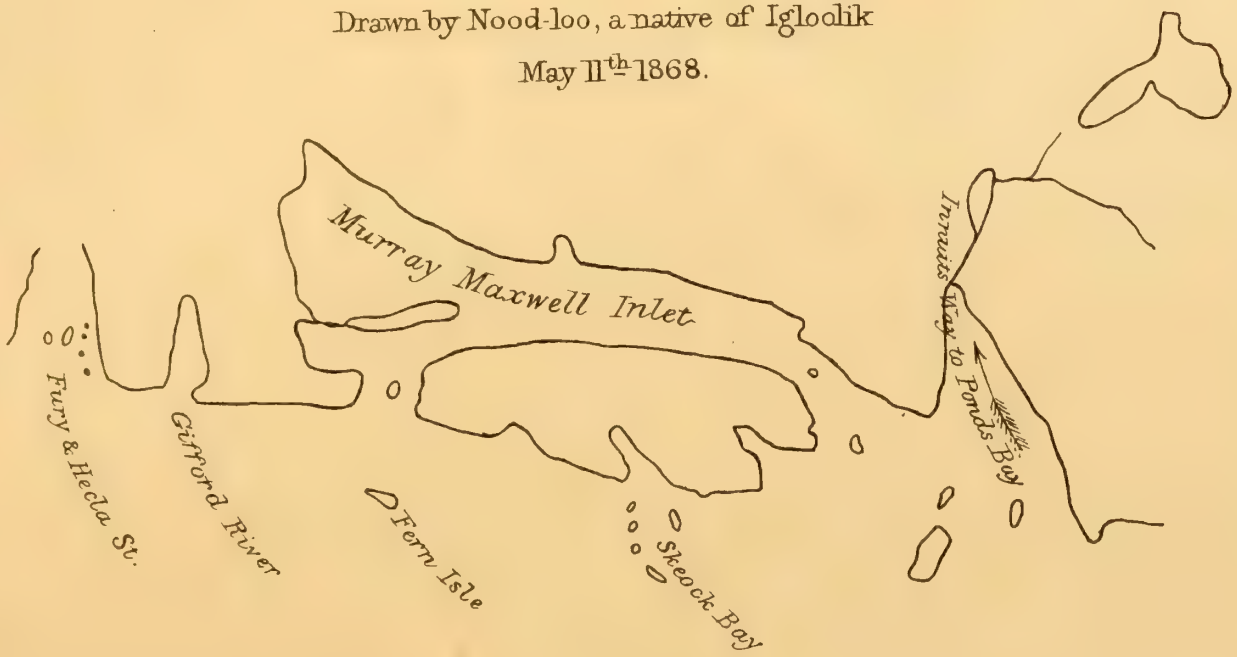
The population of the village was now again increased by the coming in of several new families from the northeast to see the stranger. The first news which he heard was the loss of *Ag-loo-ka* and his friend *E-nū-men*, who were irrecoverably swept away while walrusing on the ice; the next was that another native had further accounts to give him of *Kia's* strange white man. Hall determined to defer a proposed geographical exploration of the strait and go over to Tern Island to see this man. Whatever judgments may now be passed upon his persistence in this search for Franklin's survivors, his own words at the time were, "No man, knowing what I do,

Sketch of

MURRAY MAXWELL INLET

Drawn by Nood-loo, a native of Igloolik

May 11th 1868.



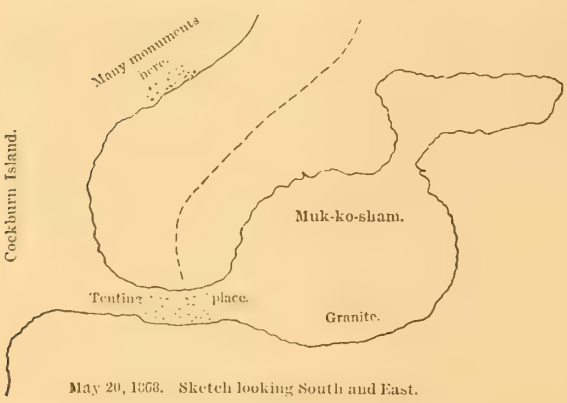
can possibly believe otherwise than that part of the lost companions of Franklin and Crozier have been living for several years on Melville Peninsula." But while preparing to visit Tern Island he made a survey of the Oo-glit group. Its open sea was rolling its high waves upon the shore, and its waters were alive with walrus, ducks, and sea-gulls—*now-yers*. Thousands of ducks filled the air with such music as made the place anything but solitary.

On the 12th, his party, with *Papa* and his family who had now rejoined them, set off for Ig-loo-lik and Tern Island, but when near the former place they met with a sister of *Kia*, a long conversation with whom brought out facts substantiating the same old story; at Tern Island the new friend, *Kud-loon*, gave him essentially the same particulars. The people of this island being found destitute, Hall shared with them some of his supplies, and made them presents. Confined to his hut by snow-blindness (*an-koot-ed* for it), the *an-ge-ko* gave as a reason for his sufferings that he had eaten out of an unsuitable pan, and had visited the *igloo* of one of *Koo-loo-a's* wives on the Oo-glit Islands at a time when he should not have done so. Before leaving Tern Island, he bartered needles, thimbles, fish-hooks, &c., for dogs, intending to make an exploring journey down the east side of Fox Channel, but again relinquished such an object, saying he had at last been able to conquer his almost uncontrollable desire to discover new lands, and had brought back his feelings of duty, to stick to the mission of finding out about the lost white men. *Nood-loo*, a native of Ig-loo-lik, drew for him the accompanying sketch of Murray Maxwell Inlet. This inlet, near the east end of Fury and Hecla Strait, he learned, is in reality a Sound, sweeping round to the eastward and forming a large island.

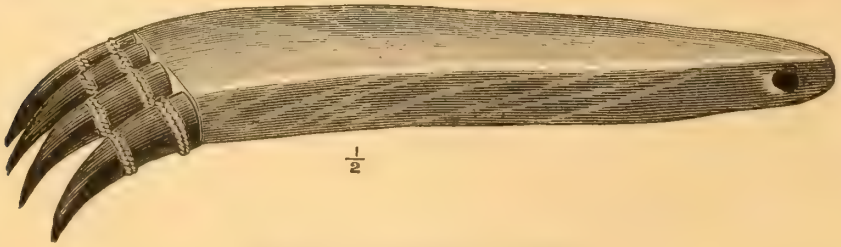
To prosecute yet one more search, on the 18th of the month, in

company with Frank, *Papa*, *Tou-tee-che-uk*, his wife, and two children, he began a journey to Parry's "Gifford River," having heard in conversations subsequent to those which have been referred to that a tenting-place and other signs of white men would be found there. On the 19th, he entered this river, which proved to be really an arm of the sea, receiving several rivulets which his guide said are filled with salmon in the autumn. Its Innuit name, *Kun-nuk-clu*, means a bay.

On the northeast shore a tenting-place was found, of which Hall made the accompanying sketch; but, with the exception of two shot and a peculiar arrangement of the stones, there was no special indication of its having been occupied by civilized men. It will be remembered that Parry's men visited it. On this journey several seal *agloos* were seen, from which the young seals escaped, but a skillful Innuit captured a full-grown animal while he was sleeping and sunning himself on the ice. The usual strategy had



May 20, 1868. Sketch looking South and East.



SCRAPER, TO ATTRACT THE SEAL.

been exercised of hitching the body, feet foremost, step by step, toward the seal, and occasionally raising the head and looking around,

as the animal constantly does when on the watch, the man then dropping his head into a cat-nap, and finally scratching on the snow with the scraper, which is made for this purpose. By thus imitating the noise which the seal makes with his flipper, he enticed it to come near him. The harpoon was then swiftly driven in.

By noon of the 21st, Hall had passed through some severe storms, but was again near Ig-loo-lik, and, after holding more talks through the next five days, prepared to return to Repulse Bay. For his supplies to reach that place he found it necessary to take great care of what he had collected; for, with a new experience of his Innuit friends, he now found that no sooner did he barter for walrus-meat than a crowd rushed into his *igloo* and devoured it. They seem to have looked upon his stores as inexhaustible, and felt they had claims upon him for the information given in the long talks into which he had led them. The details of these talks fill a number of pages in the books A and B, heretofore named. They were essentially repetitions of the conversations in April.

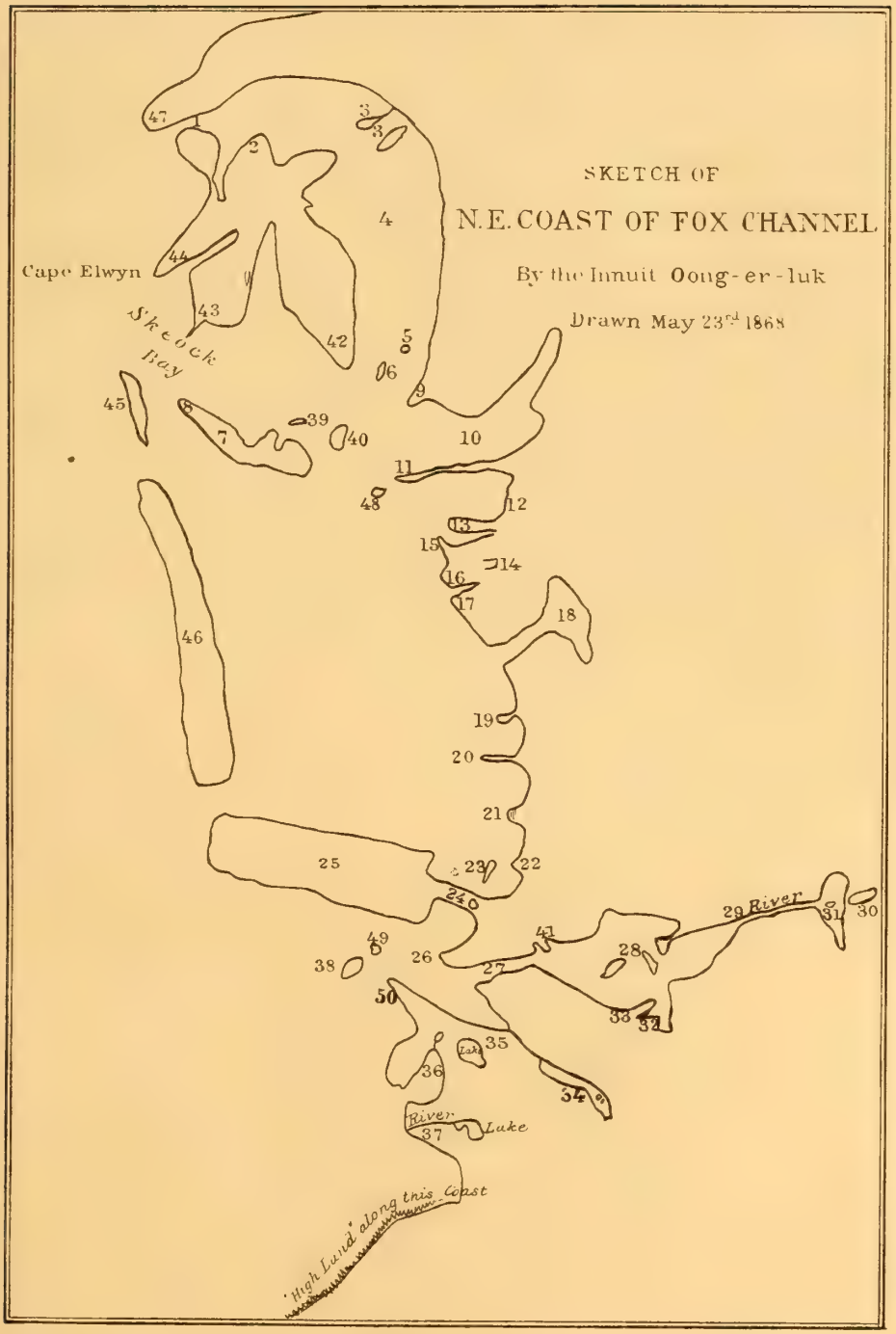
An intelligent Innuit named *Oong-er-lūk* drew for him just before his leaving Ig-loo-lik the accompanying sketches of the coast of Fox Channel and of Admiralty Inlet. They have been reproduced literally from Hall's note-books. The Innuit names are those given by *Oong-er-lūk* for the numbers which he placed on his maps. His sketches, with those drawn by *Ar-mou*, *Ou-e-la*, *Papa*, and *In-nook-poo-zhe-jook* in 1869, are presented as specimens of Innuit ideas of native localities;—ideas generally found to be very correct, as it will be remembered were those shown by the map drawn by the woman *I-lig-liuk* for Parry. [See also Chapell's letter to Hall, page 35 of this Narrative.]

SKETCH OF THE NORTHEAST COAST OF FOX CHANNEL BY THE INNUIT OONG-ER-LUK.

1. Ou-ker-nar-chu. (*Never frozen channel.*)
2. Es-se-tu-e-jū-a.
3–3. Too-ki-an.
4. Tej-see-ū-ark.
5. Koo-be-nar-chū.
6. Ki-ki-tar-chū.
7. Kūd-gū-yer. (*Name of isle.*)
8. Ar-kim-e-nun.
9. Ig-lŭk-ju-in.
10. Ken-nuk-luk-ju-a.
11. Noo-wier. (*Long point.*)
12. Is-shook-too.
13. Tik-ik-kun.
14. Ee-uk-ju-ar-chu. (*A mountain, steep on all sides but one.*)
15. Arng-u-yarn.
16. Ing-nier-ing.
17. Noon-ee-tar.
18. Ear-kee.
19. We-ar-chin.
20. Tee-ke-ra-chu.
21. Eak-pin.
22. Ki-erk-chu-ken.
23. Oo-glit.
24. E-pe-u-tin. (*The isthmus, where many of the Innuits from Northumberland Inlet died, some of starvation, some by murder. Too-koo-li-too's sister was of the ones killed.*)
25. Shar-tuk-ju-a.
26. King-ark-ju-a.
27. Shok-bur. (*Water and land*).
28. Tar-ri-o-ar-chu (*Bay.*)
29. Pee-lig. (*Where river enters bay.*)
30. Ee-soo-e-too. (*Small lake.*)
31. Teg-suk-ju-a. (*Large lake.*)
32. Ar-ten-ni-eu.
33. Ou-le-chee-wa-chu.
34. In-nook-she-lik. (*Lake and land.*)
35. Kung-ook-too.
36. Mi-uk-too-le-ar-chu. (*Bay.*)
37. Ned-lu-ark-ju-a.
38. Ki-ki-tar-loo. (*Name of the two isles.*)
39. Man-uk-toe.
40. Arng-mark-ju-a.
41. Kig-gur-wig.
42. Nug-lee-we-too.
43. Shartoo.
(*Between 43 and 44 is Skeoch Bay of Parry's chart.*)
44. Kop-e-e-we. (*Cape Elwyn of Parry's chart.*)
45–46. Sed-ler. (*The land southeast and east of Cape König of Parry's chart.*)
47. See-er-wark-ju.
48. Im-me-yay-too.
49. Ki-uk-tar-bin.
50. Wall-ing-yer.

NOTES WRITTEN DOWN BY HALL FROM DICTATION BY OONG-ER-LUK.

From Shar-too (43) to the "high land" of sketch, it would take six days with dogs and an unloaded sledge, the dogs going fast. As Innuits generally travel,


SKETCH OF
N.E. COAST OF FOX CHANNEL
By the Innuit Oong-er-luk
Drawn May 23rd 1868
Cape Elwyn
Sketock Bay
River
Luke
River
Luke
High Land along this Coast

with families and household goods, it would take fifteen days; so say Innuits that have lived for many summers all along the coast sketched. I think the distance from Shartoo (43) to said high land to be from 250 to 300 miles. From Ned-lu-ark-ju-a (37), old man *Nou-le-ar-ju* says one can see the mountain which is near to the very large lake which is on the route Innuits take in traveling and voyaging from Ebierbing and Too-koo-li-too's country (Too-nuk-jok-ping, Northumberland Inlet) to Ig-loo-lik. The large river which runs from said lake, called Kook-ju-a, is more than half way from Too-nuk-jok-ping to Ned-lu-ark-ju-a (37). A woman, very smart and intelligent, by the name of *A-mer-goo* (wife of *In-nun-king*), *who came from Northumberland Inlet*, says that when the party she accompanied from her country to Ig-loo-lik left the mouth of the great river that runs from Kook-ju-a (the Great Lake), it took eight days to get to E-pe-u-tin (the peninsula of 24) in their *oo-mi-en* (great family boat). Much of the land was very low, and when the tide ebbed they used to let their boat take the ground instead of trying to get to the shore, for they had to stand far out from it to keep in water that only at flood-tide was deep enough to float their craft. On getting to 24, the Innuits always make portage, instead of going so far as to round the long land (25).

SKETCH OF TOO-NOO-NEE-NOO-SHUK, OR ADMIRALTY INLET, BY OONG-ER-LUK.

1. Too-joo.
2. See-goo-ar.
3. Ok-ke-oge-nŭn.
4. Koud-loo-too.
5. Sing-i-ze-oke-big.
6. Kŭn-ŭk-lu-ar-chū.
7. Kŏk-oo-lū-in.
8. Kŭn-ŭk-lu-ar-chū.
9. Shoo-ŭk-te-lik.
10. Ouk-bar-too.
11. Tel-ler-ar-chū.
12. Eke-pe-ar-chū.
13–13. Ki-ŭk-tar-zhū.
14–14. Noo-win.
15. Oo-look-shŭn. (*Natives live here much when ice is gone.*)
16. Eke-pe-ar-chū.
17–17. Pŭt-tar-te-lik.
18-18. Kun-nuk-too. (*A bay.*)
19–19. Ki-ki-tou-kin.
20. Ki-ik-tŭn-ten-al-loo.
21. Ki-ik-tun. (*The island.*)
22. Se-er-wok-te-ū.
23. Eve-ju-ar-chin.
24. Ang-no-quo-zham.
25. Now-yarn.
26. Eke-pik-ju-ar-chin.
27. Ok-big-seer-ping.
28. In-nŭk-too-big.
29. E-ter-be-lŭ,
30. Sĕd-no-wa-ling.
31. Sĕd-no-way-sŭk.
32. Ed-lŭk-ju-in.
33. Tee-kee ra-chŭ.

34. Ki-ki-tar-zhu.
35. Kub-lo-e-tit.
36. Too-ler-kŭt.
37. She-ming.
38. Tin-nee-je-va-loo.
39. Oo-pung-ne-wing.
40. Kŭn-ne-i-rung. (*Natives live much of the time here.*)

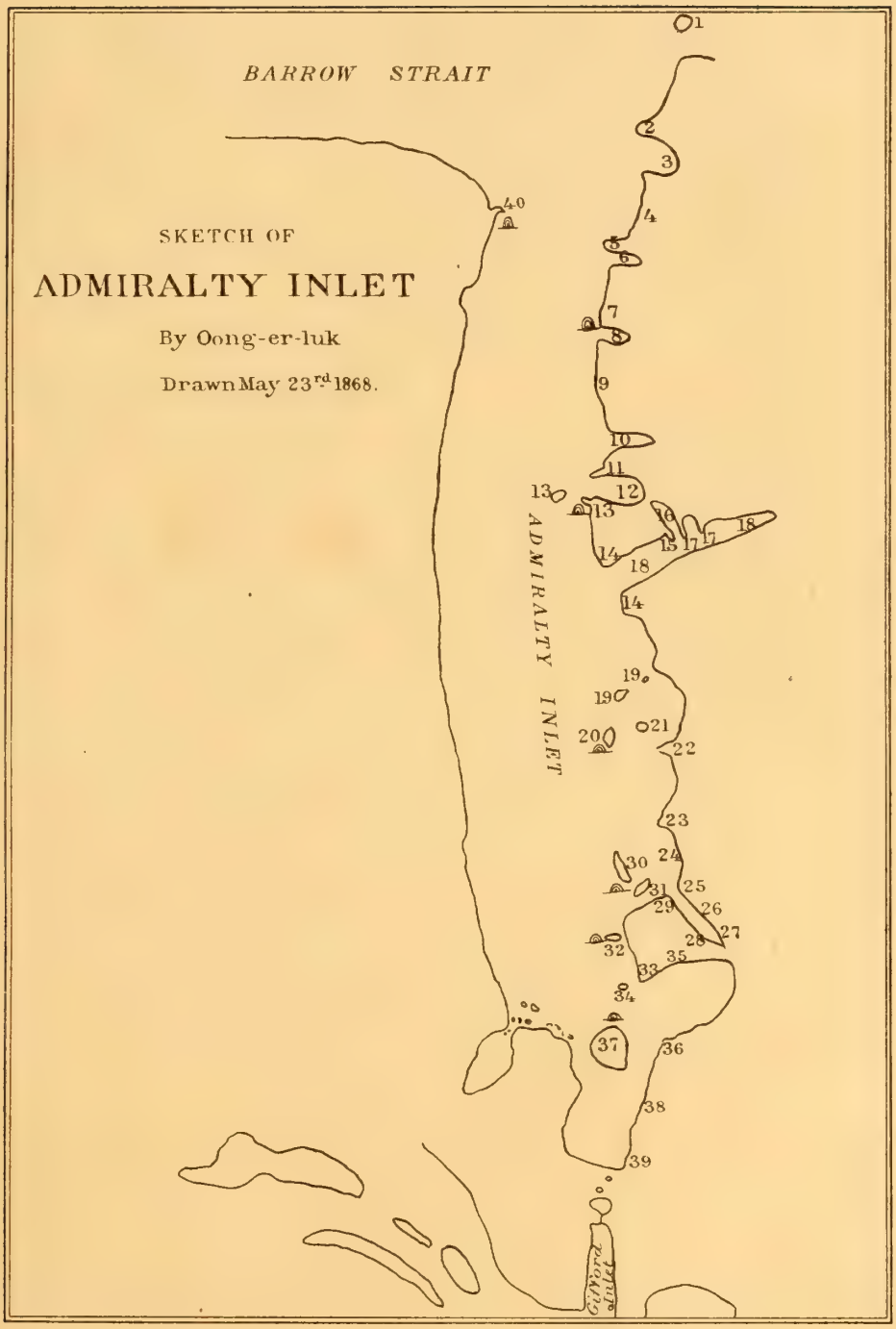
NOTES WRITTEN DOWN BY HALL FROM DICTATION BY OONG-ER-LUK.

The width of the bay not so great at and near the entrance as farther in. One medium day's good drive with dog-sledge from one side of the bay to the other in its general width. The trend of bay not exactly north and south, but little to the northeastward and southwestward.

At the mouth of the inlet early spring whaling might be prosecuted, for a great many whales are always seen close to the bay-floe by the natives as early as April and May. Ice out of the whole bay every year, and then there are a great many black whales, white whales, and narwhals all over the bay. Very good anchorage for ships at 16 and other places in the bay (18–18). Good for ships in 6, 8, 10, and 12. High land and deep water about and in 18–18. Innuits in the summer kill whales in 18–18. No rough ice in the bay Too-noo-nee-roo-shuk; all smooth floe. No icebergs or other heavy ice finds its way into this great bay, for it all sweeps onward with the current in Barrow Strait to the eastward. When the wind is from the east, and the ice is driven westward, for some reason it does not drive down into the bay. Coast on the west side nearly straight, and without any indentations. High land on west side.

After the ships have all left Too-noo-nee (Pond's Bay), having finished whaling by the floe there, then is the good time to see a great many whales in the great bay of Too-noo-nee-roo-shuk. Once a whale was found in the bay of T. K. by the natives which was dead, with lines and harpoons in it. A great many narwhals killed by Innuits at T. K. and their horns taken by them to Pond's Bay and bartered off to the whalers.

The RETURN to Repulse Bay was now begun. Leaving the Ooglit Islands on the 31st of May, Hall further examined a new bay which he had discovered and a lake on the southwest, into which he crossed by a short portage. Whenever the weather permitted, and so far as his very defective instruments enabled him on this part of his journey and until he reached Haviland Bay, he made a rough survey of the whole route But the injured condition of his compass and sex-


BARROW STRAIT
SKETCH OF
ADMIRALTY INLET
By Oong-er-luk
Drawn May 23rd 1868.
ADMIRALTY INLET
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tant and the interruptions by rain and storm and by his own sufferings, prevented his observations from being more than approximate.

Arriving on the east side of the head of Hoppner Inlet, he found three small streams, in one of which was an abundant growth of wood in a cluster of undergrowth showing some creeping trees which spread themselves out. One of these was 11 feet in length and 2 inches in diameter at the base. It was seen that "where a portion of the tree in its creeping position pressed hard upon the earth, it had sent down numerous branches of roots."*

The river where this wood is in such abundance, empties itself into the one by which he was encamped just before it enters the head of Hoppner's Creek. "It comes down a wild ravine, having steep mountain-high sand-banks on either side." Hall wrote with these words: "When the lakes have their ice loosened, all the three rivers will pour down their living, dancing waters, when salmon will greatly abound where fresh and salt water mingle." He was at the time heartily tired of walrus, deer-meat, and *tood-noo.* "His mouth watered in vain for salmon," which *Papa* and Hannah had failed to secure.

He explored the region between the head of this inlet and Lyon's Inlet, and, striking across the land to Haviland Bay, arrived on its banks on the 24th, crossed on its thin ice on the day following, at times through water a foot deep, and at 4 a. m. of the 26th, regained his encampment at Tal-loon; the sledge journey had been one of ninety-six days. It was a satisfaction to find the white men whom he had hired in full health. His dogs, too, were in as good condition as when they had started out. His Innuit friends gave him a present of

* For a most interesting account of trees growing still further north, some of them 3 feet in diameter, found in a ravine, see Osborn's account of McClure's Northwest Passage; also, Meacham's report of the trees found on Prince Patrick Island, in lat. 76° 15′, long. 121° 40.′

salmon, some of which measured 32 to 37 inches in length, weighing from 9 to 13 pounds each.

The record of the two remaining summer months presents as incidents of special interest a successful season for salmon-fishing and deer-hunting; the very unfortunate, though justified, shooting of one of the five hired men; and the capture of another whale, the possession of which, together with renewed supplies from friends in the United States, encouraged Hall to hope that he could remain over still another year and yet reach King William's Land. In this it will be found he succeeded in the following spring.

A supply of salmon had always been an object, as well for the change which it offered from the unvarying rough Arctic food, as for the value of the fish when dried and stored for the winter; but up to this time little success had rewarded the best efforts made by Hall and his hired men either with their nets or spears. The Innuits, through long practice, were experts in spearing, and they seemed to have generally considered the fishing-grounds as their exclusive property.

The notes of July 20 record a determination not to be outdone in the work. Hearing that they were securing very many fish and his men very few, Hall, though quite ill, jumped from his bed, and quickly dressing, ordered each of his company to repair promptly their sadly broken spears, for he would see whether white men could be so easily beaten; "one need not starve while such food abounds."

As the tide was about to flood, it became necessary to make great haste or our chance would be lost till next ebb; so every one worked with a will. When the spears were in order, I organized my men into a regular fish-fighting company, and then into the deep pools all in line we plunged, or in fact waded thigh deep. The Innuits had all left, each having caught as many as he could well attend to, except *Ar-goo-moo-too-lik*, whom I requested to desist while I made a

trial with my men alone. In one hour from the time we entered the ice-cold water we had every spear broken, so that not one in a dozen salmon struck could be saved. Then, all in a line, behind and by the side of our net, waist-deep in the pool, we marched, dragging the net and driving the salmon like sheep before us. When well advanced to the upper end of the pool, the water was found to be black with floundering fish. Having reached a narrow place where the net stretched from shore to shore, and penned in the salmon completely, myself, Joe, Frank, and all the rest except Antoine, who played sick, went to work scooping out salmon, and in a few minutes caught one hundred and seventy-five, the total weight of which exceeded 1,000 pounds, for the greater number were quite large.

The Innuits acknowledged themselves beaten. Hall attributed his success to the use of his excellent Brevoort net, with which he thought he would have even doubled the number taken if he had been allowed the first chance at the pool.

A most unhappy record is now to be made. From the date of his return from Fury and Hecla Strait some dissatisfaction seems to have been growing among the hired men whom he had left at the encampment when setting out on that journey. They had been lacking in their care of the stores, backward on going out on the hunts, and tardy when absent on these, as well as hurtfully careless in feeding the dogs. The ill-feeling manifested by several of them toward Hall, arising possibly from the uncertainty as to the time when any ships would appear in the bay to take them to their homes, culminated in the unfortunate affair which is best presented in his own words:

JULY 31.—Gave Peter his order to take my rifle and go on a deer-hunt, and to take along Antoine and Pat, and show them where a certain deer he had killed and deposited was, and have them bring it in. The party started off at 10 a. m. A short time after, sent Sam out to get a deer-skin and the buck-meat my Joe had left on his way home yesterday. At 7 p. m., Sam returned, having been unsuccessful in finding my Joe's bundle, and at 8 p. m. Antoine and Pat returned, and a few minutes later Peter came in, having seen no deer. Asked Antoine how far

he should think it was to where he and Pat got the deer they brought in? Answer, ten or twelve miles. When Peter came in, I asked him how far it was to the deer-deposit Antoine and Pat brought in, and he said about the same as the musk-ox deposit, six and a half miles, to where we went directly on the 23d. I asked him if he did not think that Pat and Antoine could have performed the service I sent them on in a little more than half the time of ten hours? Answer, that he thought they could. I proceeded to the men's tent, and asked Antoine and Pat if they could not have made better time in the work they performed to-day? They, with much temper, replied they could not. I told them what Peter had told me, and said that it became them to be as expeditious as possible whenever I had work for them to do, reminding them of their spending a whole day a short time since in going out only some two miles after a couple of deer, when they might have done the same in one-fourth of the time. This was followed by a burst of real mutinous conduct on the part of Pat and Antoine, to which demonstration Sam and Peter seemed to be a party. *Pat was the leader*, and I felt for my own safety that something must be done to meet so terrible a blow as seemed ready to fall. I appealed to Pat especially to stop his mutinous talk and conduct. I was alone, though a small distance off were all the Innuits of the tent-village looking upon the scene. Pat was standing in the door of the tent (he and Antoine, when I first went into the tent, were seated in it, but as their rage increased they worked themselves out to be in a circle of the other two), where he was delivering himself of the most rebellious language possible. I made an approach to him, putting my hand up before him, motioning for him to stop. He at once squared himself, doubling up his fists and drawing back in position, as it were, to jump upon and fight me. Failing to make him desist without forcible means, I thought at first to give him a good drubbing, but knowing Pat to be of a powerful frame and muscle, and that if I did make an attempt I should at once have a party of four upon me, I demanded of Peter my rifle, which he gave me. I hastened to my tent, laid down the rifle, and seized my Baylie revolver, and went back and faced the leader of the mutinous crowd, and demanded of Pat to know if he would desist in his mutinous conduct? His reply being still more threatening, I pulled trigger, and in a few minutes he staggered and fell. I walked directly, but more as a man then suddenly dreaming, to the front of *Papa's* tent, where was a crowd of frightened natives, passed the pistol to the hand of *Ar-mou*, which still had four undischarged loads in it, and then ran back and assisted in getting Pat to my tent. I supposed he could not live five minutes, but a Mightier hand than mine had stayed the ball from a vital part.

The unhappy man, Patrick Coleman, lingered from the 31st of July until the 14th of the following month, during the whole of which time every effort was made by Hall to save his life by the use of all remedies at his command and by the most careful nursing, in which his other men took their full share. Antoine made a full confession of his having done wrong. The Innuits told Hall they had expected that the four mutinous men, whom he had encountered at the time of shooting one of them, would attack and endeavor to kill him, and that it had been their purpose to run to his rescue.

He now participated in the anxious uncertainties felt by his men as to whether any whaling-vessel would visit the bay this year; and, if not, by what possible means he could reach York Factory should his hopes of making a final journey to King William's Land entirely fail him. As far back as the 29th of July (before the mutiny) he had written in his journal:

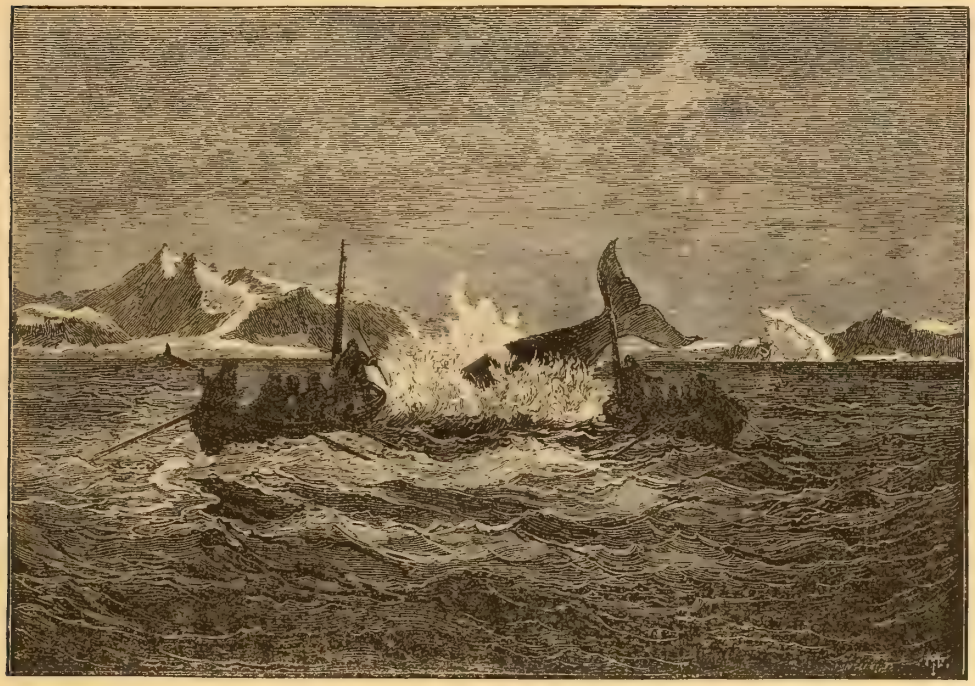
> I know not whether I and my company are to leave these regions this fall or not. Most assuredly I have had no doubts but we should. All my expectations and calculations have been to this point; but now as I look out upon Repulse Bay and see it still fast in its ten months' icy chains, I must confess I begin to have doubts. Many times a day I ascend our lookout hill to take long and prolonged looks through my "spy" down to the southeastward, in the direction of the perpetual open water that sweeps through Hurd's Channel and Frozen Strait across to Beach Point, and thence rushes down Rowe's Welcome. No ship there afar off to gladden my sight. It has been my plan that if none should enter Repulse Bay by the 5th of August, I would embark in our boat Sylvia for York Factory. But will it be prudent to attempt the voyage in this boat? I know that Dr. Rae made a successful voyage here from that place, and the next year returned to it. But his boats were large, heavy, and strong, and the Sylvia is of the lightest construction possible; her planks of cedar one-half inch thick only.

During the illness of Coleman, it was found out that at least one of the other four men had said if he could not otherwise get a boat

he would steal one, and go to York Factory with his fellows. Hall himself, under the force of circumstances, had gained *Ar-mou's* consent to have the Lady Franklin for their use, promising that the Sylvia should be at *Ar-mou's* service so long as he should still remain in the country. But on the 16th he was relieved from these anxieties by the sight at anchor of the Ansell Gibbs and the Concordia. The four men were notified that they could make what arrangements they pleased for their return, and they all promptly shipped on these vessels, Lailor, whom Hall always commends, and on whom he had somewhat counted on to remain another year, shipping last of the party. Hall gave to each a certificate of his having served through the year and his note for the payment due. As for himself, although he found that he could make very few purchases from these vessels for his still expected journey to King William's Land, he determined to stay. Mr. Grinnell had sent him some further supplies, and he would once more depend on his own labors and on the friendly Innuits.

The first encouragement which followed this determination was the capture of another whale on the 31st of August. For this the natives were as anxious as himself. The blubber was needed for fuel, the skin for food, and the meat chiefly for the dogs. When a fine rising of a coveted prize was now seen in the harbor, the native crews of the Sylvia and the Lady Franklin were quick to give chase under Hall's orders, and on the Lady Franklin's nearing the whale, *Ar-mou* splendidly threw two irons into its flank, but unhappily not until the bow of the boat had struck the animal a few feet abaft the fins. From the swiftness with which the line ran out, it was clear that the whale had struck for soundings. But suddenly the line ceased to run and the boat began to move along with great rapidity, the line still slack; she

careened, and was, at last, thrown completely on her beam ends, the explanation of which was that the whale had rushed along with the boat on its back. It was no wonder that at the time every man thought himself lost. But before long the boat righted, the oars on one side being cracked; one of them, destroyed.

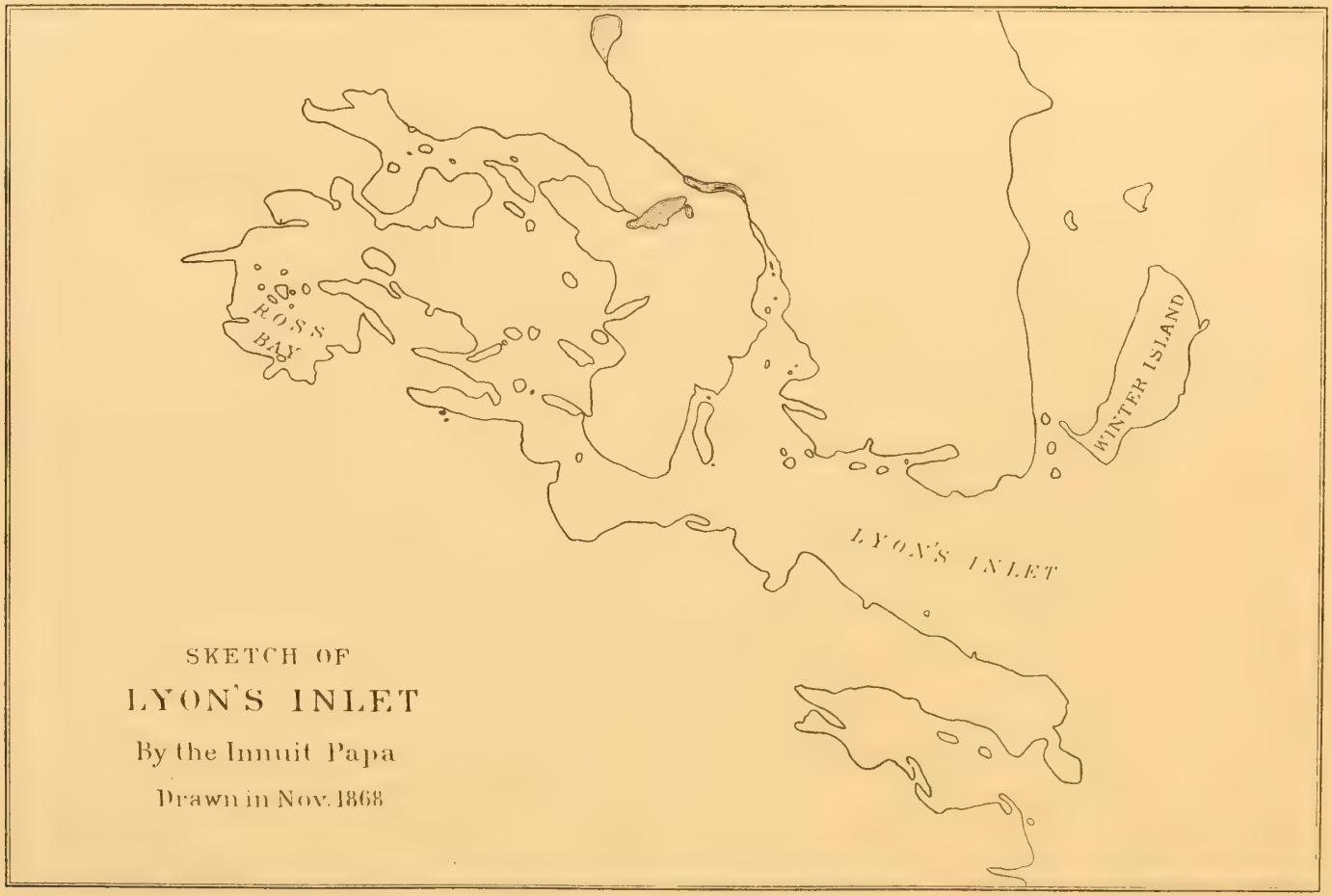


It was an hour from the first blow until the whale spouted blood and ended the struggle "with thunder-claps from its broad tail upon the waters." The natives on shore, while watching the fight, went through an *an-koot-ing* performance for its successful issue. They aided in hauling the whale up on land, and began their feast from it that night at supper. Two days later, the whole company of men, women, and children, numbering more than fifty, went hard to work making deposits, when the women cut up and carried in their hands masses of the meat; the men dragged or carried on their shoulders

blubber and meat; the children "bolted" pieces of the black skin; and trains of dogs pulled "horse-pieces" up the steep rocks. For cooking some of the meat, fires of bone and oil were made, the Innuit customs forbidding the gathering of wood at such times for fuel. Dried bones found scattered around were collected in a fire-place, which was only a few stones supporting a kettle, the bones answering the purpose also of a wick, and a very hot and sooty fire being thus kept up. The longest blades of bone of this whale measured seven feet; all were willingly and unanimously given by the natives to Hall. The cache was made at Iwillik.

On the 12th of September, a removal was made, with few of the natives, to the west side of Talloon Bay, where they spent the rest of the month and the month following chiefly in deer-hunting. Hall himself on one day shot five deer in five minutes, and Too-koo-li-too became quite a marksman.

November 4 a journey was undertaken to Lyon's Inlet to determine the location of some places in regard to which Hall had not been satisfied with Parry's chart. His companions were his old friend *Papa-tew-a*, with one of his wives and a child; his team was made up of ten dogs. On the 12th, the party were at the head of Haviland Bay; on the 14th, Ross Bay was crossed, and on the 17th an encampment made on the south shore of a peninsula to which the natives gave the same name with their northern settlement—Ig-loo-lik. Here Hall busied himself with the survey of the coasts and an examination of the channel called by Parry the Rush of Waters. Visiting the site of a stone pile spoken of by Captain Parry as put up for depositing a memorandum in the absence of Mr. Sherer, one of the officers of his Second expedition (1821), Hall found it still undisturbed. Re-



SKETCH OF

LYON'S INLET

By the Innuit Papa

Drawn in Nov. 1868

maining for some days in this locality, he discovered and surveyed a creek called by the Innuits Nee-bar-bic. He then learned that there was another bay on the east side of Lyon's Inlet corresponding in latitude to Parry's Norman Creek, and was thus able to understand some difficulties. Parry had erroneously given the Innuit name of his Norman Creek as Neeb-wa-wik, the pronunciation of which is close to that of Nee-bar-bic. When Hall had heard of this last creek from the Innuits he had taken it to be Parry's Norman Creek, and could not understand that the distinguished navigator had placed this ten miles out of position; it was the application of the Innuit name only which was wrong. He was gratified by the discovery of a new creek in an inlet which Lyon had so thoroughly examined that he thought no arm or branch had been overlooked; but believed that the approach had been hidden from these officers by a high island.

When the party wished to encamp at night on the 14th of the month, they took possession of a newly-deserted *igloo*. It was dark at 4 p. m., when they entered, but soon afterward an Innuit known as *Tom* came in with his child from one of his deer-meat caches. He brought the news that *Ar-tung-un*—the man who at Ig-loo-lik had once exchanged names with Hall—was at the point of death in a village a little northward. Hall visited him the next day, but found that the poor consumptive was past saving, and was insisting that his son should end his sufferings by stabbing him or by shooting him with an arrow, against which Hall's earnest interposition was ineffectual. The *igloo* which he had been occupying had been built by *Ar-tung-un's* son, that he might remove to it instantly on his father's death, and so avoid the loss of several days of mourning. The day following he hung his father.

The note-books of this journey are filled up with the minutest details of the visits, of the observations attempted, of their computations, and of the perplexities into which Hall found himself driven by the severity of the cold, the changing season, and the injuries renewed to his instruments, preventing the accuracy he so much desired for his work.

The notes of the night of the 15th of the month say:

Tried my best to make observations for latitude of Jupiter, but though not a cloud in the heavens, yet the stars shine dimly and fine snow is falling. Usually the sky is called hazy when it is really diffused aurora.

Again, on the 20th:

Nothing causes me greater regret than the poor instruments I have in the way of sextants. At nine this evening the heavens became clear, and I tried my best to get some good observations of Jupiter, though he had passed the meridian. By several observations I could determine the latitude, but that only could I make. The silvering on the glasses is all cracked by the frost of several winters of the North.

On the 28th, the moon at 8 p. m. was covered with a hazy atmosphere, but was gloriously surrounded by several circles: the outer one of rose color, then a lesser one of pea-green, then lilac, and then a knob of radiant light like the sun's. The outer circle was about 5° in diameter.

His pocket-chronometer having provokingly stopped, he devised a plan for detecting a repetition of the fault; this was to place the chronometer in his hood and next his right ear. The fob was made by one of the Innuit women out of rabbit and deer skin. From the time he rose till he retired, the instrument lay next his ear as in the safest and most convenient place considering the calls upon it. When keeping it next his heart, it was warm and safe from any sudden jar.

JOURNEY

TO

LYON'S INLET

1868

ey a new Inlet, Nee bar hic, was discov
tives the name, Neeb-wa wik, to Not
ax name of this Creek is Kern nuk el

85°00'

The exposures to which he had been again subjected on his journey held him close for a day or more in his *igloo*, where he wrote on the 25th: "Snatches only of sleep have I had for several nights. In noting down my work as well as in taking observations, I have had my right thumb frost-bitten, and that, when I did not know it." The aurora of that date, the finest of all he had witnessed, he could not attempt to describe.

The 29th of the month saw him back in his old quarters on the bay. In a letter to the President of the American Geographical Society, written after his return to the United States, reviewing the geographical explorations he had made on the two journeys of this year, he claims the discoveries of a new inlet, lat. 67° N., long. 84° 30′ W., a few miles north of Norman Creek; a bay on the west side of Fox Channel, lat. 69° N., long. 81° 30′ W.; a lake twenty-five miles in length, lat. 68° 45′ N., long. 82° W.; and a second lake, in lat. 69° 35′, fifty miles in length, with its two outlets, the lake running parallel with Fury and Hecla Strait. Also, two islands: one northwest of the west end of that strait and the other at its east end. What he considered accomplished of the most importance geographically, was the completion of the coast-line around the northwest side of Melville Peninsula to Cape Crozier. The bay now discovered was said to have an entrance from Barrow Strait, lat. 73° 43′ N., long. 83° W., and to extend very nearly in a southerly direction to about the 71st degree north latitude. The natives had assured him that at times they killed in it five whales in a day, and that it abounded in the smooth-back (*Balæna mysticetus*) and in narwhals and seals. It was free from ice every summer, and promised to be of as much value to whalers as Cumberland Sound.

JOURNEY
TO
LYON'S INLET
1868

85°30′ 85°00′ 84°30′

67°00′ 66°50′ 66°40′

Igloos

4th Encl. Nov. 14th 1868

Shemik

ROSS BAY

HAVILAND BAY

3rd Encl, Nov. 13th 1868.

Lake Peer-ing-o-u

Valley

Valley

2nd Encl, Nov. 12th 1868.

M! Ow-er-tuk-per-cheer

6th & 8th Encl, Nov 19th & 21st

Ig-loo-lik

Rapids

Short Cut to Nee-bar-bic Cr.

5th Encl Nov. 17th 1868

Two Peaked I

Shenetoot I.

Sherer Cr.

Peninsular

Norman Cr.

Culgrait Cr.

Lyons Rest Cove

Rapids

Koubun I

HOPPNER INLET

Red Point

Cape Reid

Five Hauser Bay

Watershed bet Hoppner Inlet and Nee bar bic Cr.

Tallaoon Lake

Middle River

Wood River

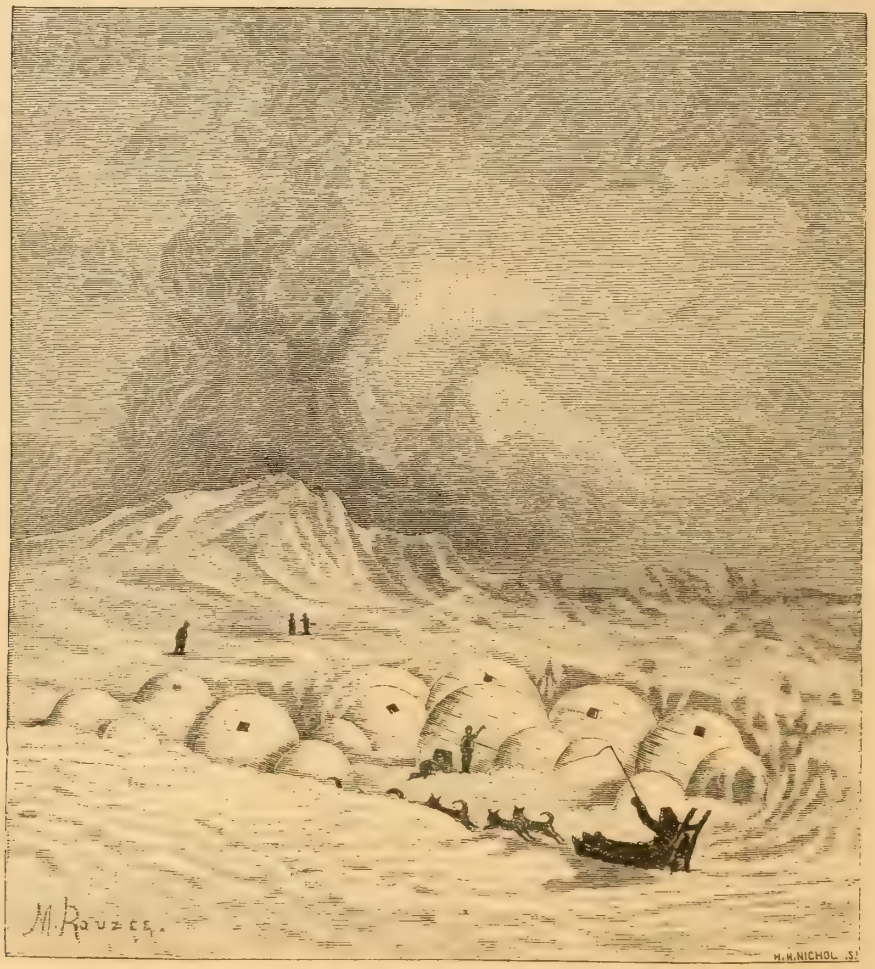
7th Encl. Nov 20th 1868

Nowyer Red Cliff

WELLINGTON

On this journey a new Inlet, Nee-bar-bic, was discovered.
Capt. Parry gives the name, Neeb-wa-wik, to Norman Cr.
The Esquimaux name of this Creek is Kern-nuk-clu-ar-choo

Returning from the last of these surveys, made as has been seen after the full setting in of the cold of November, Hall had before him a period of four months to be passed through before a sledge trip for



the Franklin Records could be renewed. The first half of this period was spent in rest and amid the winter festivities of the natives; the second half was a time of the severest labor and fatigue in preparing provisions for his next and last journey before returning to the United States.

The village near which he quartered himself now contained one hundred and twenty inhabitants, a number to which it had suddenly risen by the coming in of some from Lyon's Inlet, who had heard of the whale captures.

December and January were spent by this people in a round of amusements, feastings, and gynmastics. A low kind of gambling, spoken of as "whirling a trigger," was supplemented by renewed *an-koo-ting* performances, all of which were broken in upon at times by long and weary journeys through snow and ice to renew from their deposits exhausted supplies of food. The natives, as was to be expected, were often very improvident, voraciously consuming a load of as many as five deer in an hour after bringing them in, and then suffering from absolute want. On the first day of the new year, the fifth which Hall had now spent in the North, he entertained at dinner all those who had been with him through his first winter at Noo-wook. Ten of the forty-two had died, and but two children had been born.

He was aided by the natives during the winter more fully than ever before, no alienations such as have been sometimes referred to again occurring; but his chief difficulty seems to have been an excess of cordiality on their part, which broke in upon him while working up the observations made on his trip to Lyon's Inlet. His *igloo* was sometimes filled with men, women, and children, keeping up a constant jabbering, humming, crying, and begging; noises which made him say that if he could have some retirement, it would be the blessing of an earthly heaven. They often gave him further disquiet by unscrupulously laying hands on his own stores—never asking leave.

Papa Tew-a, on one of the bleak days of January, drew for him,

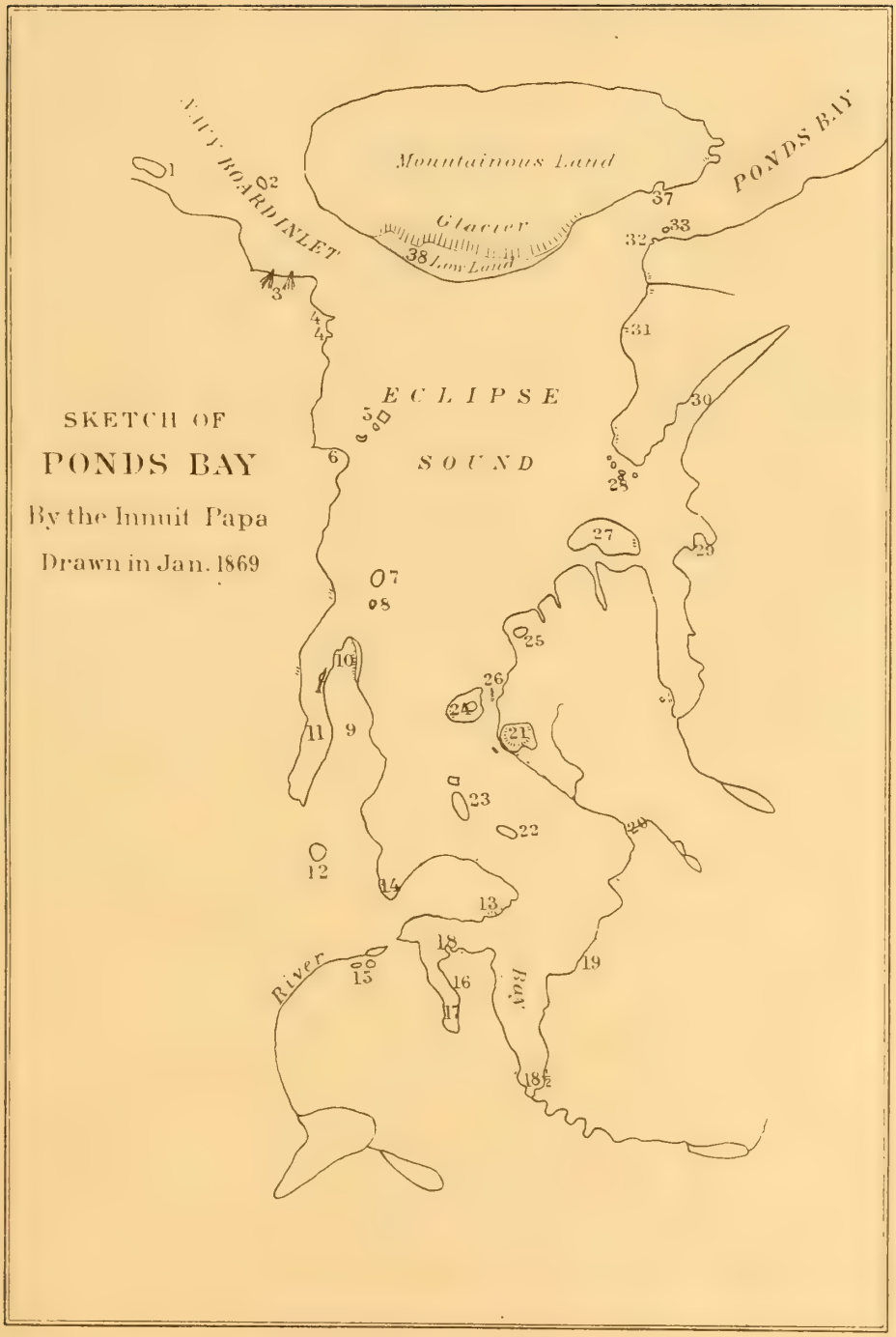
in his *igloo*, the accompanying sketch of Pond's Bay, Hall writing down from dictation the names corresponding to *Pa-pa's* numbers.

SKETCH OF POND'S BAY, DRAWN BY THE INNUIT PAPA.

1. Too-e-joo.
2. Oo-gla.
3. Discharging glacier.
4. 4. Too-loo-yer.
5. Grounded icebergs.
6. Shar too.
7. Ing-nut-ta-lik.
8. Large and high grounded iceberg.
9. Ou-kee-lee-ark-tung. (*The peninsula.*)
10. Ou-ū-ee-too. (*Glacier.*)
11. A bay abounding in whales.
12. A roof-like hill, on an extensive plain.
13. Koo-ook-ju-a. (*A very high waterfall; tenting-place there.*)
14. E-te-u-yer.
15. Two remarkable rocks.
16. Too-noo-nee.
17. Kung-e-er-a.
18. Neer-ker-oon.
19. See-er-wok-too-ū.
20. Too-arn.
21. Ung-ma.
22. Kik-kik-te-ting-nun.
23. Kik-kik-tuk-jua.
24. Im-me-le. (*Lake on this isle.*)
25. E-e-la. (*Something like a window in mountain-side.*)
26. A head of whalebone just below low tide.
27. Kim-e-big.
28. Too-loo-karn. (*Four isles.*)
29. Kook-win-ar-loo.
30. Toong-win.
31. Kin-e-loo-kun.
32. Ee-we-shar.
32. Ee-ark-ju-a. (*The point; a very high mountain and the wind heard constantly roaring at its top.*
33. Small island.

From natives of the inlet he received some singular accounts of minerals found there.

Native iron in great abundance. Stones that are of very fine grain, look pretty, and stand upright; the same being long, slender, and like round sticks of wood; some elastic, that is, will bend. Also a great many pretty stones that are transparent, just as clear as crystal, like the sun-glass given to *Ar-ka-too*. From the description of some of these stones, or I should say of some other kinds which are also like glass in appearance, I cannot well comprehend what they be, for *Ar-ka-too* says, as the sun is shining on them, if the hand shadows them, away they go down in the ground, appearing to act as though alive. By great carefulness Innuits have succeeded in catching now and then some of these wonderful stones,


SKETCH OF
PONDS BAY
By the Innuit Papa
Drawn in Jan. 1869
Mountainous Land
Glacier
Low Land
ECLIPSE
SOUND
PONDS BAY
River
Bay

and whenever they do thus succeed, the stones are hard and glass-like. This seems to be myth-like to me, but some one in the States may find this matter explainable. * * *

Since writing the above, I have looked into the Admiralty Manual of Scientific Inquiry and found the following: "With regard to dimorphism, or the crystallization of the same chemically composed substances in different forms * * * , right rhomboidal crystals of sulphate of nickel exposed in a vase to the sun were found changed in the interior without passing through the liquid state into octahedrons with a square base, the exterior crust of the original crystal retaining its first form." (Pp. 251 and 252, edition of 1851.)

That there is something peculiar in these crystals of Admiralty Inlet that makes all the Innuits there, and all distant Innuits who have heard about them, think they are sometimes as though alive, I do not doubt from the deeply-interesting account given by *Ar-ka-too.*

Early in the month of January the natives renewed their sealing on the ice of the bay, and Hall's party again fixed their headquarters at Talloon, in a commodious *igloo* built on a lakelet, where a well of pure water was easily made near the bed-platform of the hut. The *igloo* was made comfortable for eleven inhabitants. It was carefully-lined with skins hung within five or six inches of the snow-walls, making inside of it a *tupik.* This main building was an oval 22 feet long, 13 wide, and 8 feet high, and was connected by a *took-soo* (passage-way). It had six store-house huts. The floor of the passage-way, as usual, was lower in the middle than either at the doorway or at the entrance of the main building. A door of hard snow for each store-house was fitted into a casemate of the same "pure white marble."

In these quarters the chief business of February and of March was the drying of venison over the native lamps—a slow and very laborious process. While this was going on, the door-ways were closed, and five lamps whose united length of wick was fifty-six inches, were kept blazing day and night, consuming 78 pounds of blubber a week.

By continuing the work nearly every day, 170 pounds of thoroughly dried meat, equal to 680 pounds of the fresh, were obtained. This, mixed with *tood-noo* was good pemmican.* For a sufficient supply of food for the dogs on the journey Hall was soon to undertake, he was dependent on the natives, who with great difficulty caught for him a walrus far out on the ice. His health was better than at any previous time of his residence in the North; *he never had a touch of scurvy.* His thorough adoption of the Innuit dress fully protected his person, so that, with the exception of slight frost-bites on his face, he sustained no bodily injury from severe exposures. He took exercise only when necessary to procure supplies or when inclination prompted;—never for the sake of exercise purely: but he found his strength and power of endurance to increase, as is shown by his readily walking off for some

* When Hall left the United States in 1864 he contracted for 500 pounds desiccated beef incorporated with 500 pounds of beef-suet tallow and put up in tin cans of 25 pounds each. He had now learned the value of this pemmican in days bordering on starvation, on which he had sometimes fallen. Hence his great labor at the date of setting out finally on so long a journey. In this connection it may be of interest to refer to the provision made by the distinguished Arctic explorer Richardson when setting out on his boat voyage through Rupert's Land in 1851. The most ample means for the preparation of full supplies was in his hands. He describes it follows: "A round or bullock of beef of the best quality having been cut into thin steaks, from which the fat and the membranous parts were pared away, was dried in a malt-kiln over an oak-fire until its moisture was entirely dissipated and the fibre of the meat became friable. It was then ground in a malt-mill, when it resembled finely-grated meat. Being next mixed with nearly an equal weight of melted beef suet, or lard, the preparation of plain pemmican was complete; but to render it more agreeable to the unaccustomed palate a proportion of the best Zante currants was added to part of it, and part was sweetened with sugar. Both these kinds were much approved of in the sequel by the consumers, but more especially that to which the sugar had been added. After the ingredients were well incorporated by stirring, they were transferred to tin canisters, capable of containing 85 pounds each; and having been firmly rammed down and allowed to contract further by cooling, the air was completely expelled and excluded by filling the canister to the brim with melted lard through a small hole left in the end, which was then covered with a piece of tin and soldered up.

"The meat in drying loses more than three-fourths of its original weight; 35,651 pounds were reduced to about 8,000. * * * The natives of the Northwest dry their venison by exposing thin slices to the heat of the sun on a stage under which a small fire is kept, more for the purpose of driving away the flies by the smoke than for promoting exsiccation, and then they pound it between two stones on a bison-hide. In this process the pounded meat is contaminated by a greater or smaller admixture of hair or other impurities."

distance in a *rue-rad-dy* (harness) with a sled-load of 429 pounds, the sled-shoeing of which was iced moss. Healthful occupation of the mind, devotion to the work still before him, and a continued friendly intercourse with the natives and participation in their amusements and hunts were, doubtless, the additional causes of his freedom from sickness and casualty during this season, as they had been through the preceding four winters.

By the 21st of March he had nearly completed his preparations for a start. To secure dogs and their food, three trips were made inland and two to a settlement on the ice; requiring in all a journey of 170 miles. Nearly six hundred balls were molded over a coal-fire in a small stove belonging to *Ar-mou.* The stores which he was to leave behind were placed in charge of his Innuit friends to whom presents were made, the packages of which were each labeled with a tag having on it the picture of an animal, as a help to *Ar-mou's* memory in delivering them to each friend. All appear to have been at this time cordial well-wishers of his success, a goodly number of them being professedly ready to go with him.*

* They were probably again ready for a change. The two preceding months had been to them a season of unusual suffering from cold, and at times from want. But few seals had been caught. The severity of the cold had been experienced throughout a fearful gale in January, lasting through ten consecutive days; and in February there was the unprecedented occurrence of a burying up of their snow village, closely endangering the lives of all the Innuits. In one of the huts, a child, which had rolled a little way out from its mother's sleeping-robe, froze into ice. The Journal of January 25 had read: "Still another day (the seventh) of the severest storm I have ever witnessed. All day yesterday, the wind was but one degree less than a hurricane force; and it was with great danger that I ventured out from the *tooksoo*, to visit my Wind Indicator, though the distance is not more than 20 yards. The storm is right abeam, and the only way to keep myself erect is by strong bracing against and reclining on the wind; yet with all this precaution, now and then the wind will lift and drive me tumbling and rolling like a drunken man. It has been so charged too with drift, that it has been impossible to designate whether the sky was clouded or fair: I suspect that the latter is the case, for I could see the moon to-night dimly through the drift, which appeared to be the only obstruction. This p. m. the drift changed from the soft, pliant, impactable kind to that of dry sand (so to speak); and then *by attrition* the snow-walls of our edifices began to be destroyed. An alarming fact was then palpable—that we should

Hall was in high spirits when, on the 22d of the month, he advanced a load of provisions to North Pole Lake, and he would have started out on that day with his full stores and his ammunition and weapons to meet even the Neitchille tribes, had not a severe gale set in. The delay of one day was a trial.

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soon be shelterless in this most pitiless storm unless we could devise some way to stay the swift destruction. *Papa Tewa* and I, in our full winter rig, ventured out with a desperate determination, sought our way here and there about the building, and threw up banks of snow against such walls as had been entirely *worn through*, or were nearly so; at one exposed place of our castle we fastened a large deer skin across the hole by pegs driven into the walls. But for the moonlight, though dim, it would have been a doubtful case as to our staying the ravages of the sand-like drift. The whole dome was destroyed at night, but it was not of the hardest compact snow. When it was rebuilt it was again lined with seal and walrus skins, which when first brought into the hut were stiff with ice, but after hanging within for an hour commenced dripping. The ice was then pounded from them.

Ebierbing, with some of his friends, came in on the next evening after traveling all day under the continuance of this storm; the drift so thick that at times, the dogs were completely hidden from the driver's sight. On asking what made him venture out, he answered, "Because we are *so* hungry." The Innuits out on the ice of the bay for sealing (numbering one hundred and ten persons) are all suffering; Joe brought to our *igloo* a *drug* of Ook-gook oil & blubber, on getting which from a cache, they found that the Polar Bears had eaten up the meat.

Under renewed necessities forced upon us, Joe visited a Fox-trap a mile and a half from Iwillik and found two prize swithin. The stone trap was of a peculiar kind. Built up of a semi-globular shape, about four feet in diameter & four feet in height, it had a hole near the top large enough only for a fox to *squeeze* himself in. The animal on scenting the meat jumps down to the bottom, as, at times, ten or more of them are found to have done. Once in, there is no getting out.

Chapter XIII.

JOURNEY TO KING WILLIAM'S LAND AND RETURN TO THE UNITED STATES.

MARCH 23 TO SEPTEMBER 26, 1869.

CHAPTER XIII.

HALL BEGINS HIS FINAL JOURNEY TO KING WILLIAM'S LAND—ROUTE TOWARD PELLY BAY THE SAME WITH THAT FOLLOWED IN 1866 AND 1867—THE CACHE MADE IN 1867 REACHED—SAFETY OF THE STORES—DEPOSIT MADE FOR THE RETURN JOURNEY—ENCAMPS ON LAKE TEP-SUK-JU-A, APRIL 8—ON AUGUSTA ISLAND, APRIL 11—MEETS PELLY BAY NATIVES—PECULIARITIES OF THE ICE FORMATION—FLYING SLEDGE TRIP TO THE IGLOOS—FRANKLIN RELICS—HALL'S NATIVES ALARMED—THEIR FEARS QUIETED—MUSK-OX HUNT NEAR SIMPSON'S LAKE—NEITCHILLE NATIVES MET—CONVERSATIONS WITH IN-NOOK-POO-ZHE-JOOK—MORE FRANKLIN RELICS—ENCAMPS ON TODD'S ISLAND—GRAVES OF FRANKLIN'S MEN VISITED NEAR PEFFER RIVER—GRAVES ON TODD'S ISLAND—DEEP SNOW PREVENTS FURTHER SEARCH—UNWILLINGNESS OF THE NATIVES TO REMAIN—RETURN TO REPULSE BAY—INFORMATION FROM IN-NOOK-POO-ZHE-JOOK ON THE ROUTE—ABUNDANCE OF GAME FROM KING WILLIAM'S LAND TO REPULSE BAY—MUSK-OX HUNTS—HALL'S LETTER GIVING THE RESULTS OF THIS JOURNEY—ARRIVES AT REPULSE BAY—PLANS OF RETURN TO THE UNITED STATES—OCCUPATIONS DURING JUNE AND JULY—PLACES THE BONE OF HIS SECOND WHALE AND HIS MUSK-OX SKINS ON THE ANSELL GIBBS—HUNTS THE BEAR AND THE DEER AT WHALE POINT—SAILS FOR THE UNITED STATES—ARRIVES AT NEW BEDFORD, SEPTEMBER 25, 1869.

The first page of Hall's note-book for March 23, 1869, has on its face the same cheerful words with those recorded in setting out on his hopeful journey of 1866—

"NOW FOR KING WILLIAM'S LAND!"

Neither the long and discouraging period of four and a half years through which he had passed, nor the repeated inducements offered to return to the United States, were permitted to stand in the way of renewing this inscription.

His party now consisted not of white men on the plan proposed

in 1866, but of five Eskimo men, three women, and two children. These were Ebierbing and Too-koo-li-too, with their adopted daughter, *Pun-ny; Ou-e-la*, *Pa-pa*, *Nu-ker-zhoo*, his wife (*Pun-ny's* mother), *Eek-choo-ar-choo* (Jerry), and his wife, with infant in her hood: in all, eleven souls.

SETTING OUT FOR KING WILLIAM'S LAND, MARCH 23, 1869.

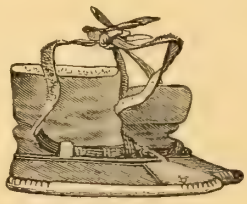
Proposing to follow his old route from Gibson's Cove to Pelly Bay, and remembering that nearly the same route had been well charted by Dr. Rae, he thought it unnecessary to occupy his time and attention with astronomical observations on this part of the journey; and for like reasons would dispense with compass bearings, taking care, however, to record the actual distances traveled. Experience strengthened his purpose of conforming to the natural custom of the Eskimos in making at the outset but short daily advances with heavily-

loaded sledges; this was additionally necessary to inure himself and party for a journey involving all the hardships and the length of time now required. A gale blowing with the force of 8 prevailed at the time of starting out; it had the peculiarity of many Arctic storms in its being filled with drift for a few feet upward only, while "above all was clear as a bell." At 10 p. m., they completed the first *igloo* on the east side of North Pole Lake, and retired to sleep on a full Arctic meal. The quantity of food consumed by the party of eleven for their supper and for breakfast the next morning, was forty-four pounds, exclusive of coffee and molasses; Hall says he allowed every one to eat as much as he would, and he himself ate as much as any one. In the morning, a heavy drift, with a cutting wind from the northwest, discouraged the Innuits; yet they went forward to please their leader. At this time he had loaded the sledges more heavily than on any of his previous journeys, for on weighing them accurately, he found that the gross weight of the sledge Grinnell was 2,724 pounds, and that of Brevoort, 2,521, making an aggregate of 5,245 pounds, exclusive of the weight of any of the party who might ride. This was an average of 292 * pounds for each of his eighteen dogs when all the travelers walked. But the lame dog Sylvia was not at the first attached to either sledge, and for several days six of the others were missing: the rest were, at times, busy with their usual fights. The runners of sledge Brevoort—16 feet in length, with a depth of 10 inches—were shod with slabs from the jaw-bone of a whale. Its seventeen cross-bars were each 2 feet 11 inches.

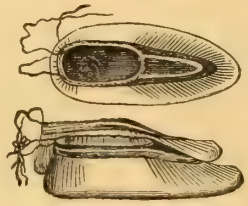
* Lyon, in his Journal of the Hecla, under Parry, says that his nine dogs drew 1,611 pounds on a sledge of wooden runners, neither shod nor iced, a mile in nine minutes; and that, had his sled been iced, 40 pounds more could have been put upon it for every dog. Hall's loads exceeded Lyon's, and were for a long pull.

The second *igloo* was made on North Pole Lake where it narrows by a projecting point of land on the east side; and their third was on Christie Lake, close by the one made on the 5th of April, 1866. Hall was again much troubled by the repeated stopping of his chronometers,*

DEER-SKIN BOOTS.



SEAL-SKIN FOOT-GEAR.



SEAL-SKIN FOOT-GEAR.

which led him into errors in recording his dates; he was unable to correct these until the middle of the month following. To relieve his own weakened team, he and *Pa-pa* walked for some time in the *rue-*

*His method of correcting his chronometers may be learned from the following notes (literally copied) made at the earlier dates of November 19 and 23 of a previous year:

"NOVEMBER 19.—On arising this morning, I found to my dismay that my Eggert's chronometer, which I now use as my standard, had stopped. My rule is: the 1st thing before rising in the morning to wind up Ward's chronom., which I keep on my person day & night, and then wind Eggert's, which I keep in a little tin trunk that sits on the bed-platform between my bed & the wall of the *igloo*. Fortunately I compared the chronometers on the 16th; therefore this gives the basis for resetting my standard.

Ward slow on M. T. Ft. Hope (present encampment)			$5^m\ 17^s$
Ward losing per day $15^s.85 \times 3$ days to date (19th)		$=47^s.55$	
Subtract 3 seconds as I compare chronometers at xi a. m. (approx.)	3^s		$=+45$
19TH—Ward slow on M. T. Ft. Hope, xi a. m			$6^m\ .02$
Long. Ft. Hope W. Greenwich			$v^h\ 47\ .44$
Ward slow on M. T. Greenwich			v 53 .46

Compare chronometers:

	1st comparison:	2d comparison:
Eggert	v 3 54	v 5 0
Ward	xi 3 0	xi 4 6
	6 0 54	6 0 54

Eggert's fast on Ward			6 0 54
Eggert's fast on Greenwich M. T			$0^h\ 7^m\ 0^s$

"No doubt there will now be a new rate for Eggert's, and this I must determine by some star or planet, as the sun is now too low for time purposes. The rate of Eggert's, previous to its running down, was — losing $28^s.6$ per day."

raddy (harness) alongside of sledge Grinnell. *Ou-e-la* here struck off to the west side of the lake, to visit the spot where his brother *Ar-too-a* was drowned from his *ki-a*. *Nu-ker-zhoo's* wife confirmed the account of the Franklin party as given by her in the previous year by pointing out the spot where she with others had here seen the strange white men going south.

His work was continued on the first favorable day which followed (the 23d), thus:

"At ix^h 19^m, by Ward's chronometer, the rising sun was shining on the upper part of Beacon Hill, from the crest down some seventy-five feet. At ix^h 25^m, by same chro., the sun's semi-diameter was above the crown of a hill about one mile to the southward and eastward, 100 feet or so above the level of the sea. My place of observation was on the top of the abrupt hill next to N. Pole River, directly opposite or northeast of Beacon Hill, and elevated, say, 75 feet above the sea.

Compare chronometers, 2^h 6^m 0^s p. m., by Ward's of this day (23d, civil time):

(23d) Eggert's, viii^h 6^m 0^s (G. M. T. on deducting 5^m 10^s).
(23d) Ward's, 2^h 6^m 0^s (Fort Hope M. T. on adding 7^m 6^s).

Ward slow on E 6 0 0

Now to determine (in the absence of any late astronomical obs. for time) whether or not Eggert's has the same rate since restarting it on the 19th inst. that it had before it ran down, I proceed thus:

1st comparison of chros. on the 19th was at xi^h 3^m a. m. by Ward or astronomical T. 18^d 23^h 3^m
2d " " " to-day (23d) was at 2^h 6^m p. m. by Ward or astronomical T. 23 2 6

[4 3 3
(or 4^d.1271)

Interval betw. 1st and 2d comparison, using the former rate, Eggert's losing per day. 28.6 ×

Loss in 4^d.1271 ..... [118.035 06

[1—58

Eggert's fast on G. T., 1st comparison ..... 7^m 8^s

Eggert's fast on G. T., 2d comparison 5 10
Time by Eggert's on 2d ..... = 8^h 6^m 0^s
Time G. M. T. on 2d 8 0 50
Time by Ward's on 2d 2 6 00

Therefore Ward's slow on G. M. T 5 54 50
Long. Fort Hope west of G. in time 5 47 44

Ward slow on M. T. Fort Hope 0 7 6
Ward slow on M. T. Fort Hope (19th), 1st comparison. ..... 6^m 2^s
Ward rate 15.85 (losing per d.) multiplied by the interval 1st and 2d comp'n ..... 4^d.1271 = 65^s.414535 = 1^m 5^s.4 = 7 7.4

0 1.4

Computing Ward's gives the same result.
The 2 chronoms. have probably maintained their old rates.

The day following, Hall succeeded in discovering the tracks of the missing dogs, brought them all in, and made up an equal team for each sledge. He was tempted to follow the Innuit preventative of

Another way of gaining the same result.

The difference of the 2 chronom. on 1st comp'n (19th)		6h	0m	54s
The difference of the 2 chronom. present date		6	0	0
		0	0	54
Eggert's loss in the interval 4d.1271 (× 28.6 losing per d.)	118d.03s			
Ward's loss in the interval 4 .1871 (× 15.85 losing per d.)	65 .41			
				52.62
				1.38

Thus the difference in the results between computing the rate of Eggert's alone and applying it to Eggert's as the standard, and that of computing the rate of both and applying them to each respectively, is only about one second and a half, or, as above, 1s.38.

Without noticing the few seconds in the rates of the chronometers in the interval from ixh 25m a. m. to 2h 6m p. m. (both by Ward), I will proceed to compute for the apparent time of sunrise this morning to this latitude, which is N. 66° 32′.

Let the basis be ixh 25m a. m. by Ward, the time when the sun had ½ its disk above the hill to the southward & eastward or astronom. time	22d	21h	25m	0s
Ward slow on M. T. Ft. Hope			7	6
Astronomical time Fort Hope	22	21	32	6
Add long. of Fort Hope W. of G.		v	47	44
Greenwich M. T.	23	3	19	50
Equation			13	18
Greenwich apparent time	23	3	33	08

Without going through the whole process, I will simply state that the result is the approximate hour angle of the sun's rising, which is 2h 3m 12s or ixh 56m 48s a. m. apparent time. Now for precision take this latter time and work out the time the sun's centre would be on the sea horizon if there were no atmosphere, or, in other words, if there were no refraction:

ixh 56m 48s a. m. of 23d, civil time, or	22d	21h	56m	48s
Fort Hope, diff. of long. W. of G.		v	47	44
G. app. time	23	3	44	32
			(23–3.74)	

S. Dec. (23d.)	20° 25′ 23.5″	31″.01 per h.
	1 55.97	3′ .74
	S. 20° 27′ 22.5″	115.977.4
		1.55.97
Lat. 66° 32′, tang ..		10.362.384
S. Dec. 20° 27½, tang ..		9.571.774
Cosine		9.934.158

2h 3m 2s hour angle.

ix 56 58 a. m.

Time apparent sun's centre on the horizon not allowing any refraction."

their running off, *i. e.*, by tying up one of the forelegs to the neck. At 5 p. m., doubling up his teams, he ascended Im-nuk-too, the narrow neck of land at the end of the mile-long lake which forms the water-shed between Committee Bay and Repulse Bay, and at 6.50 encamped on the south side of Rae's Six Mile Lake. The travel was excellent, although the snow was soft and deep.

Halting the next day near running water from Miles Lake, the opportunity was embraced of thawing out the whale-meat and tongue, 146 pounds of which, placed in the river, had the frost taken out in one hour; this was fed to the hungry dogs, and they were permitted a day's rest, as the snow in advance of them was discovered to be still very soft. From the top of a hill near by, the sea of Ak-koo-lee, with its vast extent of jumbled ice, was seen by Joe and *Nuk-er-zhoo* (Jack)—a sea, according to *Ou-e-la*, to which in olden times Innuits resorted in the fall to kill deer, on the meat of which they lived during the winter, bringing whale-blubber from Iwillik for their fuel.

At 10.13 a. m., March 31, the party reached Cape Lady Pelly, the journey from the point last named having few items of interest. Musk-ox tracks, which once before had threatened to entice the natives off their route, were now plentiful on the banks of the sand-hills near the sea. "Jack" carelessly ran Brevoort sledge across a spit of gravel; Grinnell followed suit, and both sleds were halted for re-icing, when the successful experiment was tried of re-mossing Grinnell sledge with a mixture of snow-water and urine, the latter making the compound less liable to break up. At Point Hargrave a huge drift had been encountered, into which both sleds were compelled to plunge by the roughness of the ice close up to shore. These incidents held back the advance. In the evening, as soon as the *igloos* were up,

one of the women set the lamps agoing and melted the sea-ice for water; the others covered in the huts, while Hall pounded up the whale-blubber.

When he arrived at the cache which he had made on May 10, 1867, by transfer of his stores from their deposit of 1866, he found them still in good condition; his notes, which give the time of this arrival to the exact second of the hour on the 2d of the month, record the expression, "Thanks be to God!" The bags of bread, sugar, coffee, flour, and "Borden-meal biscuit" were frozen fast in a mass, and in endeavoring to separate these, a large rent was made in a coffee-bag, sacrificing a small part; another portion had become sodden by water finding its way from a sloping surface of rock near by into the rubber bag; these bags, however, had preserved the virtue of the larger part. The coffee had been presented by Mr. J. Carson Brevoort, of New York; it was browned and ground by Hall in the spring of 1866. The pemmican in the hermetically-sealed cans, the sugar and the brandy, frost-proof, were found in perfect condition; the tea was mouldy. The whole of these stores were at once removed to camp, and an excellent supper was set for all. Of the brandy, one tablespoon, sugar-sweetened, and with hot water, was served out to each, the dose being repeated in fifteen minutes. The remembrance of this article being in the deposit which he helped to make in 1867 had already inspired "Jack" when approaching the cache and in his work of unearthing it. For use on his return journey, Hall again made a deposit of part of the stores just named under the same rock at Cape Weynton which had covered them when left there in 1866.

From the Cape he was now to turn his face westward to the long-desired King William's Land; but he at once experienced a renewal

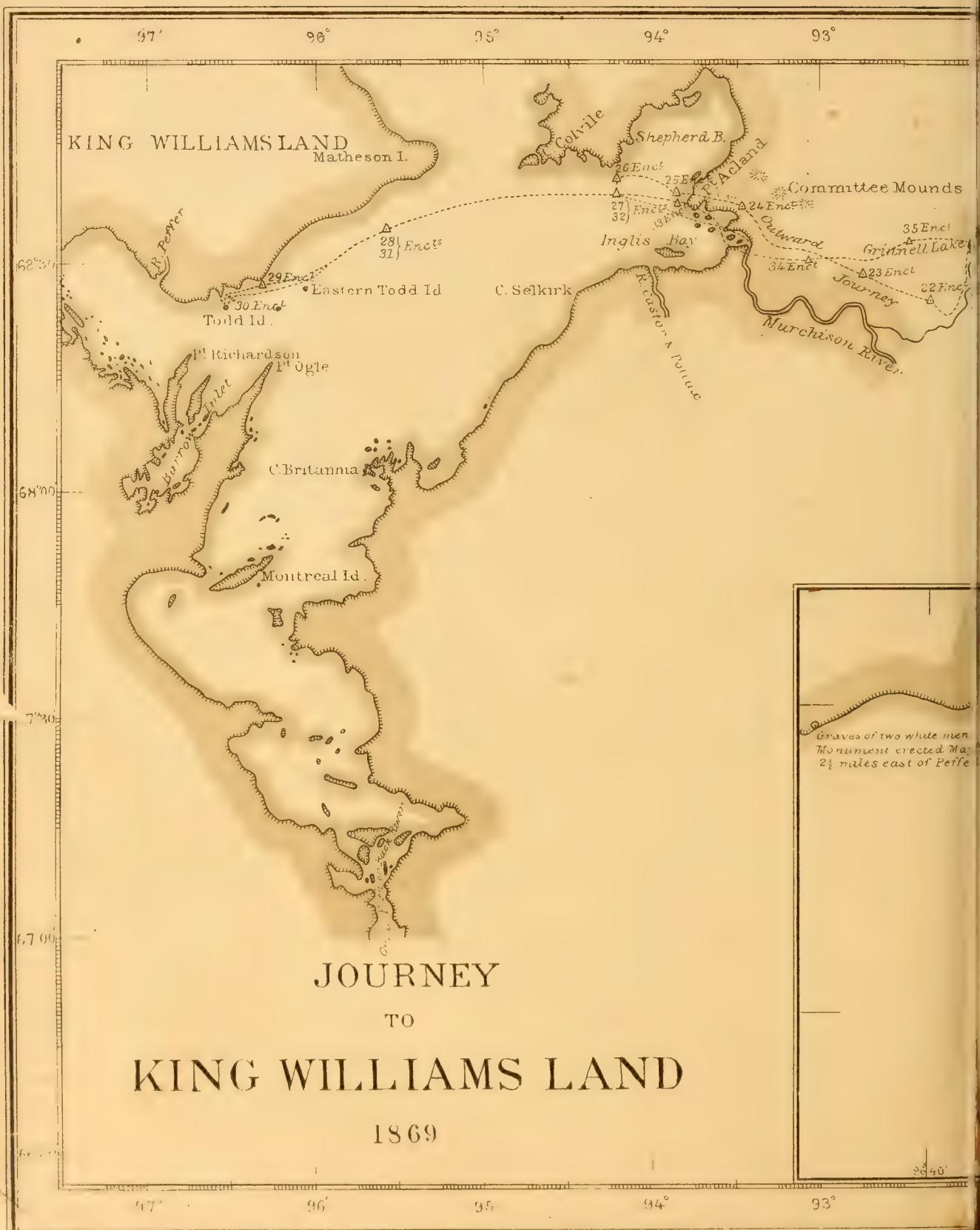
of the unwillingness of his Innuit party to go forward. They were tardy in making any preparations for advance; they made their old pleas of the necessity for their dogs being rested, and contended about the proper route to be pursued He says: "If I ever get to the end of my journey with such an untamable party it will be a great feat indeed; they look to Joe also for an example, and he is taking life cosily and lazily." Under some uncertainties as to the best course on this first part of the westward route, *Ou-e-la*, on whom the main dependence was to be placed, preferred the one which he said had been formerly taken by himself and his father across the land from Colvile Bay; and "Jerry," the Pelly Bay native, concurring in this, Hall submitted to their direction. Starting again on the 4th of April, at 6.46 a. m., on a northwest course, he found the land very low and covered with snow, except where patches here and there had been laid bare by the winds. The weather became stormy and the travel heavy. The Innuits expressed their surprise at the ease with which he could direct their new course by the compass, and *Ou-e-la* again showed his native intelligence and his habit of observing time correctly by halting of his own accord at nearly the very moment at which Hall had told him he might halt when the chronometer-hand should indicate it; but the next day he was mistaken in his supposition that he could himself find the route, and was willingly guided by Hall's compass.

On the 7th, the chronometers gave more satisfaction, running well by careful nursing. The course for the next two days was still to the northward and westward; the land was still very low and gradually sloping. Descending the steepest of a few hills which they crossed, the party came upon their first small lake, and a little farther on upon a second, which Hall at first supposed to be Dr. Rae's Cameron Lake,

but found his error before the close of another day. He had passed several deserted *igloos* and several Innuit stone monuments on the ridges of little hills, on one of which was found a knoll of solid rock, with Innuit stones set up in lines.

The discouragements did not diminish. Some of the Innuits rode very freely upon the sledges, and "Jerry" suffered himself to be even caught on one of them fast asleep. Hall, who throughout all his expeditions seems to have expected that every one would in some degree share his enthusiasm, singularly enough records here that the natives had no appreciation of his mission, but must continually lose time by stopping to smoke and talk; yet he adds that it was surprising that the dogs could make any headway at all, as the sledges sank down full six inches all the way, and at one time stuck fast in a huge drift on the hill-side. Dr. Rae's chart was a guide to be fully relied upon, even without the aid of the compass. Hall accounts for a mistake which he thinks Rae made in regard to putting Colvile Bay on his map, by attributing it to the low and level character of the land where he expected to strike it. By *Ou-e-la's* advice he made his fourteenth encampment on the 8th on the new lake which they had reached. Its Innuit name is Tep-suk-ju-a; Hall notes its trending to the northwest. Here *Ou-e-la* very significantly said that this was the place where his father and the Repulse Bay Innuits made their halt before their meeting with the Pelly Bay natives.

The next day, to make a more rapid advance, the dogs were fed at an early hour; the whole amount supplied to them being, however, but 60 pounds—a half feed. The men of the party were ready for a vigorous start, for their strength had been renewed by a pemmican supper the night before. The butter at the morning meal was the


97°
96°
95°
94°
93°
KING WILLIAMS LAND
Matheson I.
Colvile
Shepherd B.
Pt Acland
Committee Mounds
26 Encl
25 Encl
27
32) Encls
24 Encl
Outward
35 Encl
Grinnell Lake
Inglis Bay
28
31) Encls
34 Encl
23 Encl
Journey
22 Encl
29 Encl
Eastern Todd Id
C. Selkirk
30 Encl
Todd Id.
R. Castor & Pollux
Murchison River
Pt Richardson
Pt Ogle
Burrow Inlet
C. Britannia
Montreal Id.
Graves of two white men
Monument erected May
2½ miles east of Perfe
JOURNEY
TO
KING WILLIAMS LAND
1869

91°
90°
89°
88°
87°
PELLY BAY
Becher R.
Augusta Id.
16 Encl
15 Encl
17 Encl
18 Encl
19 Encl
20 Encl
36
37 Encl
38 Encl
Ellice Mtn
John Barrow Lakes
14 Encl
Outward Journey of 1869
13 Encl
Cameron R.
Richardson R.
Arrowsmith R.
39 Encl
Homeward Journey of 1869
40 Encl
12 Encl
Keith B.
Pt Anderson
C. Beaufort
Colvile B.
40 Encl April 30th 1866
Mc. Tavish Hill
C. Weynton
38 Encl
Sledge
37 Encl
Swanston Pt.
COMMITTEE BAY
C. Lady Pelly
36 Encl
Pt Hargrave
45 Encl
35 Encl
46 Encl
34 Encl
Miles Lake
47 Encl
Rae Isthmus
33 Encl
Upper Narrows
Lower Narrows
32 Encl
48 Encl
Christie I.
31 & 49 Encl
North Pole I.
30 Encl
Ft. Hope
Beacon Hill
68°00
67°30
67°00
Grave of one of Franklin's men
Monument erected May 13th 1869
Kooker Id
Newyarn Id.
86°25
To Eastern Todds I.
2 Monuments erected May 15th to the memory of five of Franklin's men whose bodies were found by the Natives
30th Encl
Keeuna Id.
(Western Todds Isle)
86°20
To Pt Ogle
96°30'
96°20'

best *ook-gook* oil, supplied to Hall by *Pa-pa* the winter before for his night lamp. Expecting to meet Pelly Bay men before the close of the day, all the party busied themselves in getting their spears, knives, guns, and pistols in order, and at 10 a. m. moved off toward the northwes end of the lake to descend the little river leading from that point to Pelly Bay. The snow was still deep and soft, the thermometer indicating 23°, a temperature uncomfortably warm for traveling. At noon, drawing near the end of the lake, highlands were found on each side, closely confining the banks of a river; and here the first spots of bare ice were crossed, swept clean by the high winds through the gorge.

Beginning now, as he supposed, to descend Kellett River, in two minutes he was surprised to find himself *ascending* frozen rapids where the compass-bearings had pointed out the true place of entrance. Continuing up this river, he passed a magnificent pile of rock structure 200 feet high, looking like the side of a fortress, and having a kind of reddish moss far up on its cliffs; the land on the other side also was high and bold, presenting a very different scene from the flats over which the party had been for several days passing. The dogs still drew their heavy loads through the deep snow which covered the ice of this river, and when halts were made to discover from neighboring hill-tops a route to the bay, the ruggedness of the mountainous land presented a discouraging prospect; yet Hall consented to follow the advice of *Ou-e-la* by going forward rather than returning to the route of Rae's chart. Late in the day, detaching the dogs and putting bridles on the sledges, he made a dangerous descent to another lake at the foot of a steep and high hill, estimating this descent to be nearly 400 feet in the quarter of a mile passed over. He was a good way off

from the route followed by Rae in 1854 through Kellett River. On the day following, however, shaping his course to the westward, he gladly saw the sea-ice directly ahead. Far as the eye could reach with the aid of a good glass the bay and every inlet were filled with very old and rough ice. At 11 a. m. he found this bay-ice very hummocky; rounded hillocks in some places rising to the height of ten feet, while in others the ice was like waves of a heavy sea suddenly frozen in. At 1 p. m. he struck on Century ice The Innuits had anticipated this when they had found the ice of the sea of Ak-koo-lee in the same condition, and *Ou-e-la*, remembering that on his previous visit here with his father the ice had been smooth and fit for sealing, now expressed his belief that the Pelly Bay natives would not soon be met with, for they must have gone inland and southward to obtain subsistence; the bay being probably full of old century ice, there could be no sealing. Having made some further advance across the ice, Hall fixed his sixteenth encampment on the 11th in the midst of the century ice near the east end of Augusta Island, *Ou-e-la* and Jerry having on the way pointed out this island and the mouth of Arrowsmith River. Their bearings were taken. In recording the location of his encampment, Hall says:

> It is no wonder that my dead-reckoning may be faulty, with but the aid of a small compass across a plain unknown country; snow-clad; thick weather; snowing much of the time; no object whatever in sight to aid in making straight courses; large variation of the compass; no sight of the sun, moon, or stars by which to determine latitude or the extent of variation of the compass,—I can determine by astronomical observations only the errors which are possible but not probable.

At 7 p. m., an hour after his encamping, the sun burst forth in all its brightness, giving him the first sight of it since leaving his encampment below Cape Weynton.

The dogs had now again a whole day's rest and a full feed of 126 pounds of *kow;* then with full paunches they filled out the twenty-four hours with sleep. Not one of the eighteen had as yet given in, although their loads on the two sledges, including their food and the oil for fuel and eating, had been kept up to 2,100 pounds. The party made another excellent breakfast, chiefly on the canned beef sent out by Mr. Grinnell on the Ansell Gibbs in 1866; it was better than what had been previously used, as the whole of the meat was fat, with no bones to be picked out, and more than satisfied their hunger, leaving a portion for use on the way. Hall now hoped that he would make good progress, and within ten days would put his foot on King William's Land.

On resuming their journey, an *igloo* was seen which, it was at once determined, had been newly built, the quick perceptions of the Innuits crediting also its building to a left-handed man, for they saw that the spiral of the hut ran from the left to the right inside, contrary to the usual direction. The discovery of this *igloo* with its well-made *took-soo* suggesting the near presence of Pelly Bay natives, Hall sent out some of his company to find, if possible, their sledge-tracks; but although three additional old *igloos* were seen, the natives were not yet overtaken. The huts last discovered had evidently been occupied in midwinter, and the occupants had had plenty of fire. Within one of these Hannah found a piece of ash wood, appearing to be the remains of an oar.

When he left his last encampment, Hall had intended to make directly for the west side of the bay, and thence cross the land to the west, in order to look for the records and relics at some southern point on the sea estuary of Great Fish or Back River; but now, seek-

ing to come up with the Pelly Bay men, in the hopes of getting from them yet further information and even some papers of the Franklin Expedition, he changed his course to the northward. This led him over a narrow ice-flow of the previous winter's formation He camped on this floe, which was found to be good sealing ice—new, but somewhat hummocky; and from the top of a round hillock of century ice 12 feet above the general level he cut the ice to melt for making his coffee. It was full of little cells, in which the salt of the sea-water once was, the cells being occasionally as large as the thumb, though generally not larger than a pin-head. The surface had mud or clay imbedded in it, while at a considerable depth, the crystals were pellucid, solid, and like fresh-water ice. On the floes of this Polar ice here and there were masses in the form of a berg. The century ice was "a puzzle as to how and where it was formed," and an equal difficulty presented itself in the question "how the bergy masses of bare blue old ice got to the top from the margin of the old floes."

SABRES CARRIED BY HALL TO KING WILLIAM'S LAND.
(Presented to Mr. J. J. Copp on his return.)

On the 10th, a flying sledge trip was decided upon to find the Pelly Bay Innuits. At an early hour new spears were made by fixing bayonets to the ends of long poles. There seemed reason to fear an attack from the fact of the well-known dissensions long existing between the men of his party and these strangers; aware of which, Hall had provided each sledge with rifles, guns, bayonets, revolvers, a musk-ox and a seal spear, and

some ammunition. Still the heart of *Pa-pa* now failed him, and he wished to stop with the women in the camp, which proposition was declined.

At 7.53 a. m., when the party again started, the sun was out, but the drift still filled the air, confining the view to a radius of a quarter of a mile. Following a north-northeast course, in a half hour they found Innuit foot-prints, which the gale of the night previous had laid bare; they seemed to have been made the day before. After following for two hours the tracks on this course, the party retraced their steps to the point at which they had first seen the foot-prints, and on advancing in the opposite direction, the dogs soon scented the *igloos* and flew ahead with so rapid and keen a jump as to trip up Hall and *Pa-pa*, entangling one of Hall's feet and dragging him along till the company with their whole force stopped the coursers. Ten minutes later they arrived near the *igloos*, and "Jerry" was cautiously sent forward, but soon reappeared with the signal to come on. After a halt of twenty minutes in the gale and drift outside, old *Tung-nuk* and wife and old *Kob-big* appeared armed with long knives, but greeting the new-comers with a welcome. These men had remained at these *igloos*, while three families had located themselves a short distance northward, the men belonging to them being absent at this time on a musk-ox hunt to the westward.

On Hall's entering the huts, with "Jerry" and *Pa-pa* for interpreters, he began at once his usual inquiries about the Franklin Expedition. *Kob-big*, like his brother, old *Kok-lee-arng-nŭn* the chief met by Hall in 1866, was sociable, jolly, and apparently kind-hearted. He was a dwarfish creature. In *Tung-nuk's igloo* was found a gallon stone jug of a light pinkish hue weighing about 5 pounds, the handle broken. It was

without mark or stamp, but was said to have come from King William's Land. Hall also found a copper *kood-lin* (lamp), 2 feet 6 inches long and 1 foot wide, and about 5 pounds in weight; the end of a sword 4 inches in length; a snow-shovel 3 feet long, made of pine or spruce, evidently painted at first lead color, and over this a coat of white except that the lower face was of fresh wood color, and a piece on the left side was light green. This last article the Innuits said they got out of a ship's beam or plank at Ki-ki-tuk—King William's Land. On asking *Tung-nuk* about this snow-shovel, he said it came from a large *ou-mi-en* (ship). Was it there now? No; it had sunk. Did the ice break it? No; the Innuits, in getting wood (timber or beams) out of it, made a hole in the ship, and soon after, it sunk. The snow-shovel was made of material very much thicker than it is now. *Tung-nuk* had never been to Ki-ki-tuk (King William's Island), but knew a great deal about what had taken place there from his acquaintances who had been all over the island. The sword-point mentioned above was immediately bartered for.

INNUIT SNOW-SHOVEL.

Tung-nuk told Hall that when the remains of the white men were

discovered by Innuits on King William's Land, arms, legs, &c., were found cut off to be eaten, and the cut of the bone had always showed this to have been done by a saw. *Kob-big* said that all of the white men except two who were a long time ago at Ki-ki-tuk had perished. One of the two was *Ag-loo-ka* (Crozier), and both of these had certainly been seen by some of his (*Kob-big's*) friends. This last information made Hall greatly regret the absence of two of these, *Too-shoo-art-thar-iu* and *In-nook-poo-zhee-jook.* The former of these, who was said to have taken some care of Crozier and his men when nearly starving, was now in King William's Land. The latter, who had been all over Ki-ki-tuk, and knew a great deal about the lost expedition, was, when last heard from, at the estuary of the Great Fish River, and was very ill.

The natives of this bay and of Neitchille had lost nearly all their dogs the previous winter by the same Arctic disease which had swept off those of Repulse Bay and Ig-loo-lik. The people were in an almost starving condition, evident signs of suffering appearing within and without the *igloos.* Nothing like food was found but a few seal-bones with a trifle of rotten meat on them. There was no fire in the huts, and Hall's own company barely made out to gather a little of the fire-shrub from under the snow to aid in making their drinking-water.

Old *Kob-big* told Hall, on taking leave of him, that it would take from six to eight days to cross the land to the western sea; that King William's Land could be seen from the land on the east side of the strait; and that the island was low, and there were many Innuits on its eastern side. He said it was well that there was a white man with

these Repulse Bay natives, for it would save their lives before and after reaching the island.

Hall's men were now plainly alarmed. Some unpleasant demonstrations, shown by *Tung-nuk* himself, had much to do with this, as it was known that he had lost a relative and "must kill somebody to make matters all right between him and his God." It had been said, too, that many Pelly Bay and King William natives had recently died;—Superstition might put the cause of this on any one of Hall's party. His men were afraid either to go on or remain. But their fears were quieted and they continued their journey, though the provisions they thought would now run short, and a hunt for musk-ox cattle again wearied them without success. It was well that the sledges had been so heavily loaded on starting out on this journey, for Hall could still feed his party and give some food to these suffering natives, among whom was his old friend *See-pung-er* of 1867.

On the 18th of the month he determined by astronomical observations that his encampment (the twentieth) was on Simpson's Lake, lat. 68° 30′ 22″ N., long. 91° 31′ W. *Ou-e-la*, who had been out on a two days' hunt for musk-cattle, came in at 4 a. m. quite weary, but successful. On discovering a bull browsing on Ellice Mountain, he had succeeded in getting within range, shattered the bones of one of the animal's fore legs, and, after firing into him all the balls which he had, shot his extra new rammer into the paunch: all these shots having only wounded the bull, so that *Ou-e-la* could but drive him several miles to the sledge-tracks and leave him there. "Jack" and Joe started off with sledge and dogs for the prize, returning in two hours with the whole ox, and also a small part of a deer, which *Pa-pa* had shot. The bull had tried to hobble off, but the dogs soon brought him

to bay, nearly tearing off his skin; a hunter's knife then ended the fray. At night he was dragged within a large circular wall and skinned and dissected, when a goodly proportion of the meat, fat, brains, nose, and paunch were quickly devoured. Only the women failed in sharing the feast; forbidden because the meat was not cooked. There being no spare oil for fuel for cooking, they were fed on pemmican, which Too-koo-li-too told Hall she disliked as much as he had disrelished wolves' meat on his journey to Ig-loo-lik.

The Innuits now asked a rest from the journey to hunt more musk-cattle, as the animals would soon scatter. To keep the men in good humor, *Ou-e-la* and *Pa-pa* were allowed to go off on the hunt, while Hall pushed forward to Grinnell Lake, on which he encamped on the 22d. The two men met with some success, but Hall remarks that, as usual, "the greater part of what is killed goes down the paunches of these Innuits, although, before getting leave to hunt, the story always is that they want to get meat for the dogs. As for "Jack," he is a regular hog; he eats far more than any two others, and feeds his own dog on the choicest pieces, without a shadow of feeling for others." Hall gave him full swing, so long as he kept his hands off the sledge provisions; these he rigidly rationed out, although he was thus prevented at times even from leaving the sleds, lest some of the party would stuff themselves from the stores.

On the 27th, he crossed a branch of Murchison River, and from this point made rapid progress over a level and hard field of snow, yet his company were again disheartened, thinking that if he went on further, they and the dogs would all starve before they could get back. But *Ou-e-la* soon found the tracks of a sledge which had evidently crossed Richards' Bay and returned. Despair was then exchanged for

bright and joyful faces. The last part of the day's journey being over an unbroken old floe with many hillocks, and the dogs being very weary, the twenty-fifth encampment was made among the hummocks.

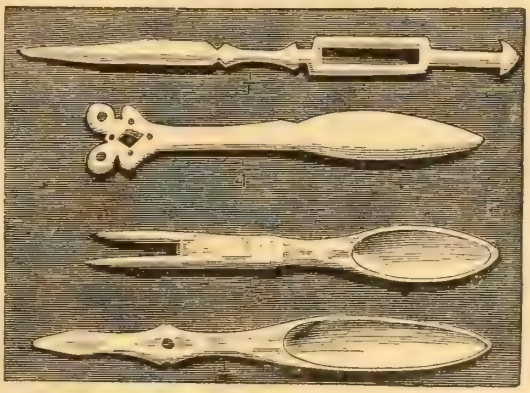
The next morning, to Hall's great grief, all at once his pocket chronometer utterly refused to go. Of this he said: "Few can imagine how strange I feel at the loss of my chronometer; its constant 'tick-tick' at my right ear I thought anything but music, but now I feel lost." His compass was very sluggish as they approached the Magnetic Pole: he allowed 80° for variation. During the day Shepherd Bay and Point Dryden came in sight across an extensive sea of hummocky ice. His highest expectations now were to find the natives whose sledge tracks from King William's Land had been seen. It was necessary, however, to tell his party that if he did not promptly succeed, he would let them stop all work and go to sealing, on which they went right to work making seal-harpoons. They were troubled about the dogs, which had become so ravenous as to gnaw the sledge-bars and destroy the moss-icing immediately on its being put on the runners, this kind of sled having been now fully proven to be superior to all others.

On the 30th, an *igloo* was seen to the southward with its wall-shelter built to protect the sealers; on visiting this, it was plain that it had been lately occupied, for fresh tracks of men and dogs were all around. *Ou-e-la* and "Jerry" were then quickly sent southward to find Innuits; and at the end of a couple of hours, to Hall's great delight, signs were recognized from the two men that many inhabited *igloos* were seen. *Pa-pa* now became more frightened than ever, and, on conferring with the others, Hall agreed to stop behind the line of pressed-up ice, which they thought would be an admirable breastwork

if fighting were to be done, for now a village was seen and a number of men with dogs sealing out on the ice.

The next morning the party started out, fully prepared to meet friends or enemies. Each of the men had at first something to say like a prayer that those whom he met would be friends; in which Hall joined, praying also, as he says, that the interview might lead to much news of Franklin's lost companions, and perhaps "to the recovery of some souls and of the records." Within 150 fathoms of the *igloos* a halt was made, Hall, *Pa-pa*, and Joe staying by the sledges, while *Ou-e-la*, Jack (*Nu-ker-zhoo*), and "Jerry" advanced a little way, with their long, sharp knives in hand. But the Innuits came out of their *igloos* and intermingled with the new-comers, on which Hall hastened forward and met the man whom he most desired to see—*In-nook-poo-zhee-jook.*

The first question asked of this man was, "*Nou-tima Agloo-ka?*" (Where is Crozier?) And the first thing shown to Hall was a large silver spoon, with an eel's head crest (Franklin's; see Preliminary Chapter), that came from a large island where many white men died. An encampment was immediately made with the chief's people, who helped to put up *igloos*, in which they used knives which had belonged to Franklin's Expedition; they had one from McClintock's. The names of the men were taken down in a book, which act pleased every one of them at the outset, and the day was spent in talks with them; the interpreters,



IVORY KNIVES, FORK, AND SPOONS OF INNUIT MAKE.

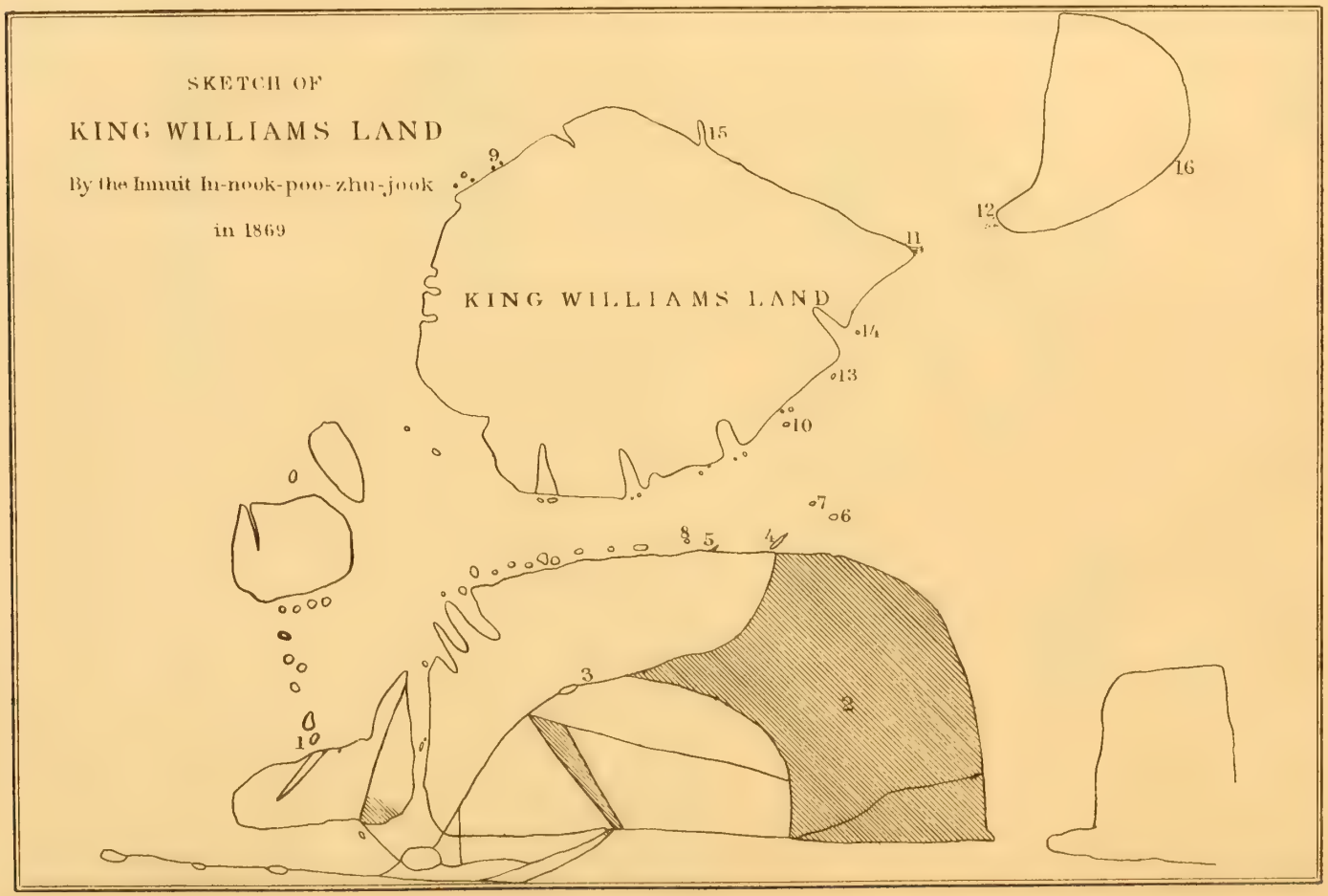
Too-koo-li-too and Ebierbing, soon getting used to their idiom. *In-nook-poo-zhee-jook's* hut was full of articles from the ships, for a number of which Hall at once bartered. This native gave him a sketch of King William's Land and its vicinity The names given by him for the numbers on his sketch were as follows:

SKETCH OF KING WILLIAM'S LAND AND THE ADJACENT COUNTRY, BY THE INNUIT IN-NOOK-POO-ZHEE-JOOK.

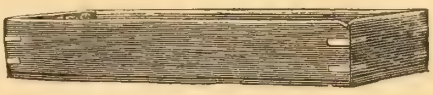
1. Kee-wee-woo. (*Where one of the ships, Erebus and Terror, sunk at Ook-joo-lik.*)
2. Oot-koo-ish-e-lik.
3. Great Fish or Back River.
4. See-er-ark-tu.
5. Noo-oo-tee-roo.
6. Ok-kee-jeer.
7. Ok-kee-jik-too.
8. Shoog-ee-look-too.
9. Too-noo-nee. (*Where In-nook-poo-zhe-jook found the two boats.*)
10. Kee-ŭ-na. (*A small island where In-nook-poo-zhe-jook has seen the remains of five white men. The Innuits all believe that Too-loo-a (Sir John Ross) died and was buried here. (!) A meat-can unopened—that is, full of meat—found in Too-loo-a's grave. His remains wrapped in blankets, and his body unmutilated, while the four remainder were—*

10. Kee-ŭ-na—Continued.
that is, limbs had been severed and flesh taken off the bones of the four. This island, one of Todd's Islets, off the south shore of King William's Land. No boat found or white men died on Ki-ki-tŭk-jūa (Montreal Island). Boat and the remains of a great many whites found on a very small island by the west coast of the inlet of which Point Richardson is the East Cape; this small island half-way down the inlet, where it turns sharply to the westward. This islet without a name.)
11. Og-buk. (*Matheson's Isle of Rae.*)
12. Shar-too.
13. Koo-kar.
14. Ook-sook-too.
15. Igloo-le-ar-choo.
16. Point Dryden.

After remaining at this village until the 8th of May, Hall set out for King William's Land, to visit a spot where, as he had heard, five of Franklin's men were buried. He could expect to make but a flying trip, as his party were determined to return to Repulse Bay


SKETCH OF
KING WILLIAMS LAND
By the Innuit In-nook-poo-zhu-jook
in 1869
KING WILLIAMS LAND
15
9
16
12
11
14
13
10
7
6
8
5
4
3
2
1

within the two weeks following. Leaving strict charge with *Ou-e-la* as to rationing out provisions in case no seals were caught, he took with him only *In-nook-poo-zhee-jook* and *Nu-ker-zhoo* and wife; the first named proving a good guide. "A plug of tobacco was given to Jack to oil his mouth, as he had much talking to do to the dogs." The travel averaged two and a half miles per hour, and as night approached, the long-desired sight of the land and the Table-Top Hill on what was called Matheson Isle came in sight. Hall gave three cheers, jotting down on his note-book as he rode, "It is a glorious feeling I have, for I have been struggling for this for ten years." Coming to a group of four occupied *igloos*, he made his twenty-eighth encampment with them near Booth Point. In these *igloos* also there

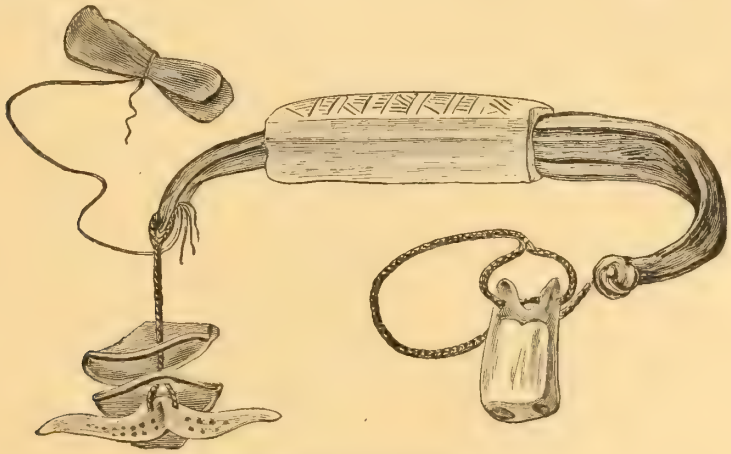


$\frac{1}{10}$

LOWER HALF OF DESK.
(Deposited at the Smithsonian Institution.)

$\frac{1}{10}$

PART OF DESK.
(Deposited at the Smithsonian Institution.)



NEEDLE-CASE, KING WILLIAM'S LAND.

was quite a collection of Franklin relics, among which was a mahogany writing-desk, 18 inches long and 10 wide, on which a bottom board had been put by the natives. It had been recently in use as

a blubber-tray. *Koo-nik*, one of this party, gave Hall a silver spoon like the one of which a drawing is found in the Preliminary Chapter of this Narrative, and a second smaller mahogany box, with another spoon and many other articles, including pieces of copper with two stamps of a broad arrow, and a steel spear-head on which was stamped "THE SHIP." All these had been brought from one of Franklin's ships and from the shore on the south side of Ook-joo-lik (O'Reilly Island). Knives, needles, thimbles, beads, and rings were given in return.

Going on from these *igloos* on the 9th, *In-nook-poo-zhee-jook* still proved to be an admirable guide, leading Hall on a direct course to the eastern islet of Todd's Islands. The compass at first showed that the travel was south, but before long it showed it as northeast when headed in the same direction. The weather was very thick when the next to the last encampment was made about 10 a. m., and supper was served on delicious fresh salmon of Neitchille, cooked and hot.

On the 11th, Hall encamped on one of these islets—Todd's Island—and immediately searched for the graves of the five men of whom the natives had spoken as buried on it. Its northwest end was very low and flat, and almost everywhere deeply covered with snow. He found part of a human thigh-bone, which appeared to have been fractured not long before; *In-nook-poo-zhee-jook* told him this was part of one of the five men But the prospect of finding the other remains was abandoned on account of the snow. *Poo-yet-ta*, a native who had gone on with Hall from his last encampment to this island, now said that the remains were not buried when he first saw them, but were found lying down all close together, each fully dressed and unmutilated. In the

pockets of one of the men a jack-knife had been found, and alongside of the remains, cans with meat in them which was eaten by the Innuits.

The next day Hall crossed over to the mainland to find, if possible, the place where two more of Franklin's men were said to have been buried. Arriving near the mouth of Peffer River, the natives built for him a snow-wall to keep off the wind and driving snow, that he might take some sextant angles. But the sun appeared for a moment only, and but once.

Late in the afternoon two of his attendants, after much labor, gave him signs of success in digging through the snow for bodies, and on hastening up to them he found one unburied skeleton. Over these remains an American flag was raised half-mast, and a monument of stones built up near by to the height of five feet. A salute was also fired in honor of these remains as to those which Hall believed were the form of one "of the heroes who had solved the problem of the Northwest Passage." The gale above and the hardness and depth of the snow under foot debarred further search. (See the close of this chapter.)

Returning from this examination of the coast of King William's Land, Hall made a second search on a point of the same southern shore, but farther eastward; for, after close questioning the natives *Poo-yet-ta*, *In-nook-poo-zhee-jook*, and *Tŭk-pee-too* a third native met with at his last encampment, he believed he might find the remains of still another of Franklin's men. After traveling about a half hour, the party halted on a long low spit, called by the natives Kung-e-ark-le-ar-u, on which the men last named "knew that a white man had been buried" This, however, was chiefly from the accounts which they had had from their people; only one of these had ever seen the grave.

The spot was pointed out, but the snow covered all from view. A monument was erected, and its bearings from Kee-u-na carefully noted.

Going back to the thirtieth encampment, and renewing his inquiries of *Tuk-pee-too* and his wife, *E-vee-shuk*, he was led by these two to a place on the southeastern end of the island, some twenty fathoms from the shore, where the wife had seen some of the skeleton bones of the five men who had died there. Of the identity of the place and of her having seen skeletons upon it she was very certain. Hall, therefore, erected a third monument and fired a salute in memory of the dead there.

The remains which have now been spoken of as found by Hall, or as honored by his "humble tributes" at the places of their burial, were all which his opportunity possibly afforded him time to search for and honor. He felt confident, during his stay with these natives, that, from a number of conversations and close inquiries (using in these McClintock's, the Admiralty's, and Dr. Rae's charts for the identifications of the places named), he could now account for probably 79 of the 105 men of Crozier's party from the abandoned ships. Their remains had whitened at or near King William's Land, and had, in some cases at least, been grossly mutilated by dogs. The substance of some conversations with the natives of this region which led him to make this estimate of the number of the perished who can be accounted for is as follows:

The journal of May 5 says: "This evening quite late (for it was quite dark in our *igloo* before the fire-lamps were coaxed ablaze), *Innook-poo-zhee-jook*, *Tee-ka-ta*, *Ow-werk*, and some other Innuits of the place are present. I will now try and see if I can approximate the

number of men in Sir John Franklin's Expedition that we now know from Innuit and other sources to have died shortly after Crozier (*Ag-loo-ka*) was seen by the four Innuits before referred to. *In-nook-poo-zhee-jook* and the others agreed to make trial in giving the number, though they say it is impossible to be precise; they were 'very many.' He now gets his five men to hold out their fingers and thumbs to represent the number of men found in that boat."

These represent	50
There were two skulls in the boat the white man (McClintock) had found before *In-nook-poo-zhee-jook* found it	2
And five he found outside	5
Not far from that boat he found another with three skulls in it and four outside	7
On Todd's Island, buried	5
On south shore King William's Land	2
If the number within and without the big tent be called	30
And we take into the account the large man with long teeth found aboard the ship	1
And the four men whose tracks were seen on the mainland near Wilmot and Crampton Bay	4
We have	106
Deduct two in the boat first found by McClintock	2
Deduct half the number probably overstated in the boat, west of Point Richardson	25
	27
Reasonably accounted for	79

The Innuits were quite sure that the boat found at the west of Point Richardson was the same one that *Ag-gloo-ka's* party had when they met the four Innuit families just above Point Herschel.

The notes of the day previous are:

Evening interview with *Ek-kee-pee-re-a*, a Neitchille Innuit, who, with his family, removed to this village to-day. After the newly arrived party had completed their *igloos* and got them to rights, I proceeded to make a call, taking Jack

along with me. My particular object was to see a glass bottle or jar, which *In-nook-poo-zhee-jook* had told me once belonged to *Ag-loo-ka's* (Crozier's) company, and now possessed by one of the families that arrived to-day. Our first call was on the old man and his family. They had part of a file 1¼ inch wide and 2½ or 3 inches long, round on one side and flat on the other; this was sharpened on one end for use as a cold chisel or an adze. *Ek-kee-pee-re-a* had lived at *Ook-joo-lik* (O'Reilly Island), and had heard the natives there tell about the ship that came to their country. The ship had four boats hanging at the sides and another was above the quarter-deck. The ice about the ship one winter's make; all a smooth floe. A plank was found extended from the ship's side down to the ice.

Gathering into an *igloo* my interpreters Joe and Jack with *In-nook-poo-zhee-jook*, and putting before the last-named native McClintock's chart, he readily pointed out the place where the Franklin ship sank. It was very near O'Reilly Island, a little eastward of the north end of said island, between it and Wilmot and Crampton Bay. A native of the island first saw the ship when sealing; it was far off seaward, beset in the ice. He concluded to make his way to it, though at first he felt afraid; got aboard, but saw no one, although from every appearance somebody had been living there. At last he ventured to steal a knife, and made off as fast as he could to his home; but on showing the Innuits what he had stolen the men of the place all started off to the ship. The party on getting aboard tried to find out if any one was there, and not seeing or hearing any one, began ransacking the ship. To get into the *igloo* (cabin), they knocked a hole through because it was locked. They found there a dead man, whose body was very large and heavy, his teeth very long. It took five men to lift this giant *kob-lu-na*. He was left where they found him. One place in the ship, where a great many things were found, was very dark; they had to find things there by feeling around. Guns were there and a great many very good buckets and boxes. On my asking if they saw anything to eat on board, the reply was there was meat and *tood-noo* in cans, the meat fat and like pemmican. The sails, rigging, and boats—everything about the ship—was in complete order.

From time to time the Neitchilles went to get out of her whatever they could; they made their plunder into piles on board, intending to sledge it to their *igloos* some time after; but on going again they found her sunk, except the top of the masts. They said they had made a hole in her bottom by getting out one of her timbers or planks. The ship was afterward much broken up by the ice, and then masts, timbers, boxes, casks, &c., drifted on shore. A little while after this fresh tracks were seen of four men and a dog on the land where the ship was. *In-nook-*

poo-zhee-jook, who had seen Ross and his party on the Victory and Rae in 1854, knew these tracks to be *kob-lu-nas'*; the foot-marks were long, narrow in the middle, and the prints like as if of the boots found in the two boats found on King William's Land. One man, from his running steps, was a very great runner—very long steps. The natives tracked the men a long distance, and found where they had killed and eaten a young deer.

Another native at this interview told nearly the same story of the ship and of the man found on board, adding that he was found dead on the floor, his clothes all on; that the ship was covered all over with sails or tent stuff. The cabin was down below and not on deck. The time was about the middle of May or first of June.

In-nook-poo-zhee-jook said that he had found a boat (a little way westward of the one found by Hobson), the planks, ribs, and all complete, and copper fastened. In the boat were a great many skeletons, the skulls with them. He gave me a double-bladed knife, with a white bone handle, very rusty. It came from this boat. The boat had not been touched, and a great many papers and books and written stuff were in it. [These are all trash to the Innuits; the winds and the weather had made destructive work with them. The Innuits would trample them under feet as if grass.]

A tent was near this boat; it was on the top of some rising ground on a small sandy hill. The place, as pointed out on the chart, was near the bottom of Terror Bay, a little way northerly of the point adjacent to Fitz James Inlet. The tent was large, and made with a ridge-pole resting on a perpendicular pole at either end; small ropes extended from top of the tent at each end to the ground, where the rope-ends were fast to sticks driven into the ground.

Three men, one of whom was *Tee-kee-ta*, first saw the tent. It had in it blankets and bedding, a great many skeleton bones and skulls, the flesh all off; nothing except sinews attached to them; the appearance as though foxes and wolves had gnawed the flesh; some bones had been sawed with a saw; some skulls had holes in them. Besides the blankets, were tin cups, spoons, forks, knives, two double-barrel guns, pistols, lead balls, a great many powder-flasks, and both books and papers written upon. As these last were good for nothing for Innuits, the men threw them away, except one book, which *Tee-ka-ta* brought home and gave to the children; after a while it got torn to pieces.

On asking *Tee-kee-ta* whether *Ag-loo-ka* (Crozier) had a telescope about him when he visited one of the tents of the Innuits, he replied:

"The first time *Ag-loo-ka* came he did not come inside; next morning he entered one of the tents of the four families who were there encamped by the west shore of King William's Land, a little way above Cape Herschel (as pointed out on the chart). His telescope was hung about his neck. *Ag-loo-ka* and his men had come along, the men dragging a large sledge laden with a boat and a smaller sledge with camp material and provision. Close by the Innuits they erected a tent; some of the men slept in the boat, which was left on the sea-ice all the snow being off the land. On *Ag-loo-ka's* first meeting with the Innuits he had a gun in his hand; on seeing him lay it down, the Innuits laid down their spears. Then Crozier walked up and said, "*Tij-mo?*" "*Man-ik-too-mee?*" at the same time brushing his hand down their breasts and shaking hands, *Kob-lu-na*-way. The time was late in the spring—July, Joe and Hannah said it must have been, for the sea-ice was nearly ready to break up; the sun was in sight all the time; ducks, *now-yers*, &c., all in abundance in the pools and lakes. *Tee-kee-ta* saw *Ag-loo-ka* kill two geese, and his men were busy shooting. *Ag-loo-ka* tried very hard to talk to the Innuits, but did not say much to them. He had a little book as he sat in *Ow-er's* tent and wrote notes. The full meaning of what he said about the ice destroying the ship and his men dying was afterward understood. He ate a piece of seal raw, about as big as the fore and next fingers to the first joint. He wore no sword. He then said he was going to Iwillik (Repulse Bay), making motions with his hands in that direction. One of his men was very fat, the others all poor; one man with one of his upper teeth gone, and one with marks on the saddle of his nose, and one man squinted, or cross-eyed. The Innuits left them although supposing that they were abandoning starved men.

Hall reproved these men sharply for leaving Crozier. Does it not, however, seem probable that these few natives feared that Crozier's large party would starve them out.

The final *Return Journey* was now begun. The natives who had gone over with him to the islands were as anxious to get back immediately to their people as had been *Ou-e-la*, and even his own two friends, Ebierbing and Too-koo-li-too, to be safe at Repulse Bay. Hall, therefore, was forced to give up a journey which he had contemplated at least as far as Terror Bay, on the west side of King William's Land. It was the place where "the tent was once found, the floor of which was completely covered with the remains of white men." But it was now urged upon him that it would be time spent in vain even to cross over to Point Richardson to seek the place of the boat found by the Innuits soon after *Ag-loo-ka's* party were seen just above Cape Herschel, for the land there was so low and so deeply covered with snow it would be impossible to tell sea from land; *Nu-ker-zhoo* (Jack) said that unless they started back to Repulse Bay within four days, the snow and ice would be off the sea of Ak-koo-lee and they would have very great trouble.

On the 16th, Hall had returned to his twenty-seventh encampment of the outward journey, where he had left nearly all the party who had come out with him from Repulse Bay. All the way back he was regretting that he could not search for a cairn of which his guide had been talking at his side on the sledge. He was sorry on his arrival to find that the natives with whom he had first met at this encampment were absent sealing; Too-koo-li-too, however, had rejoiced at their going, as they had become on Hall's departure bold and threatening. A family of

four, which was to include *In-nook-poo-zhee-jook*, had settled a bargain with *Eek-choo-ar-choo* (Jerry) for a return to Repulse Bay. Hall's provision stores had been used, as only four seals were caught; but enough remained for a hopeful supply until on the homeward journey the hunts would be resumed. The loads on the sleds would be increased by the family which would go, and additionally by the relics Hall would take, to which he found would be added such articles as a stone lamp and stone pots and kettles, bargained for by each of the women to take home. He wonders whether some one would not have purchased a dead elephant to take along if it had been the country of elephants.

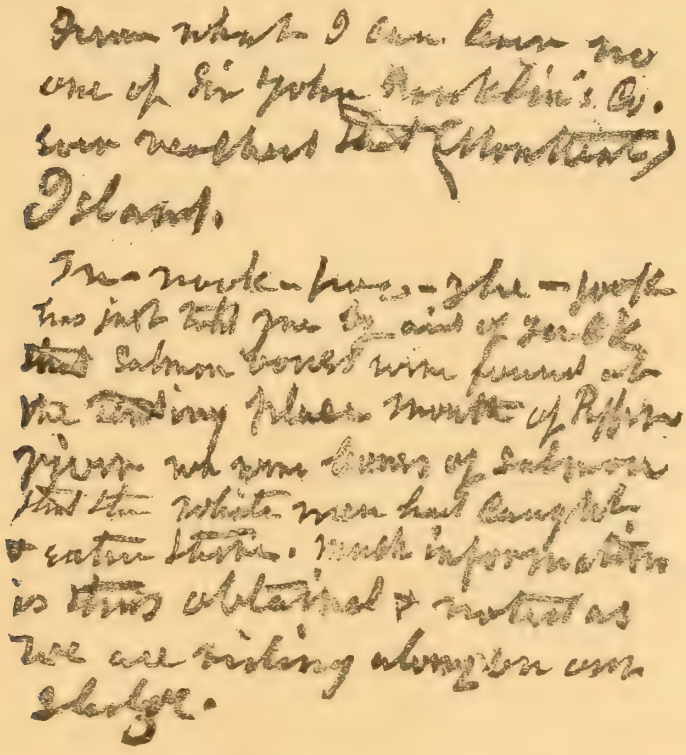
OO-KOO-SUK—INNUIT STONE POT.

One of the native women of the *igloo* village had given birth to a large, healthy babe, which the mother, on finding that it was not a male, had destroyed by throwing it away.

Still holding back his men, Hall now went off with the same two companions that had gone over to Todd's Island, determined to learn more of the dead men, and especially to find the natives who last saw Crozier and his party. Arriving at the place on Inglis Bay where, on his journey out, he had made a deposit, he again found relics in abundance, among which were a piece of a mast 14 feet in length, and oak and pine blocks, besides a part of a boat; these he placed upon the sledge. In long talks with the natives he learned interesting news of their last meeting with *Ay-loo-ka*, the substance of which, further noted in full in his little journals, will be found at the close of this

chapter, where his own summing up of the results of this journey is quoted. The flying trips made for these last-named talks cost him more than fifty miles of travel. When the sun on the 18th was 14° 30′ high he wrote once more in his *igloo:* "I find on my return all the rest still in bed; we now have coffee, pemmican, and bread; come, balmy sleep!"

On the 20th, the RETURN from this point to Repulse Bay began. The party now consisted of fifteen persons and the team of eighteen dogs, *Ou-e-la's* having come back to them after a stray, on which it had eaten the murdered babe; for this act it was not permitted by the natives for some days to do any work. *In-nook-poo-zhee-jook's* tested ability as

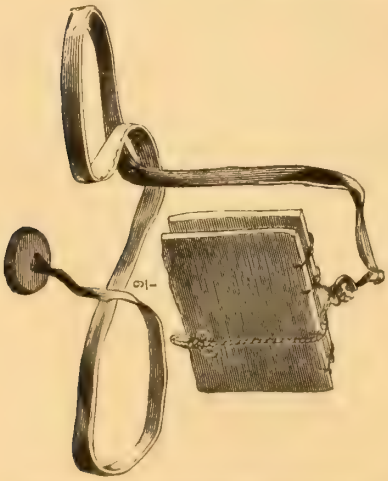


A PAGE FROM ONE OF THE FIFTY-EIGHT NOTE-BOOKS OF THIS JOURNEY;—WRITTEN ON THE SLED.

guide determined Hall to keep no special account of courses, but to use carefully the opportunity of getting from him and his driver, *Nu-ker-zhoo* all further information possible as they rode along. The page here reproduced from the note-book of the day shows how Hall set down, even when on the rough sleds, what he thus industriously elicited from his Innuit acquaintances. The last two lines of the page are an indication of frequent experiences.

The sled, though heavily laden, was so well iced by *In-noo-poo-zhee-jook* that for some distance it ran easily over the soft snow. The thermometer read 28°. By the 28th of the month, the nineteenth encampment of the outward journey was again visited, and its cache, made April 17, was opened; Brevoort sled, left at this point, was now also taken up. The Pelly Bay natives were found to be thriving on their recent hunts A day's talk was again held with them on the subject always uppermost in Hall's mind.

June 3, Hall rested near Dr. Rae's McTavish Hill, the party having had the comfort of feasting again on fresh deer-meat in place of their long-used pemmican, and the discomforts of sleeping in a roofless hut, and of seeing when they arose, the heavens thick and gloomy, the snow falling, and a wolf prowling near them. Hall was beginning to pass through a severe sickness of some days, which made him abandon a purpose to direct his course to Point Sieveright, further to the north, on the sea of Ak-koo-lee,



BELT AND TABLET-COVERS FOR THE NOTES.

to inspect a monument of which *Ou-e-la* had more than once spoken as having been built by white men since Dr. Rae's visit of 1854. Of his sudden and serious attack, he afterward wrote: "It seems all as a dream. I found myself on a deer-skin within the roofless circle snow-wall of our *kom-mong*, surrounded by my attentive men, all wearing an anxious look, until a large dose of the essence of peppermint restored me at a time when I had thought the very life was fast ebbing." This, it may be added, was not his only experience on this expedition of a sudden and unaccountable illness: premonitions of the sudden and final attack of 1871.

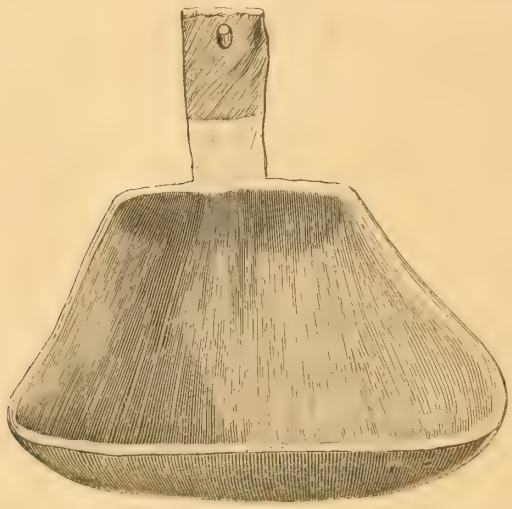
Just before reaching Cape Weynton, *Pa-pa* shot a "mother-deer," which fled, leaving the fawn to have its life "footed out"; the Innuit pressing down one foot heavily over the young heart. At the Cape, a cache of presents was left for *See-pung-er*, in return for his help in laying up blubber and meat during the winter of 1867–'68; and then Hall bade a final farewell to the point which now he had three times visited.

From this date the chief remaining items of interest which are noted in the jottings on this sledge travel through the warm month of June are to be found in the repeated and successful hunts of the musk-ox. From the 6th until the 13th of the month slow advances were made, for it was but hunt after hunt. As many as fifty musk-cattle were at one time seen in bands on the hill-sides. In one battle twenty-one were slain, Hall killing three with two balls, which were found lodged in the third, and Hannah herself killing four young ones. Hall wrote: "My *work* has been severe and protracted, and I need relaxation: therefore, I go in for the hunt." Nor could he have restrained his Eskimo party, if he had desired it, for the cry of "*Oo-*

ming-mung" always unfitted them for anything else than the chase, even when they knew it would not be necessary.

HORNS OF A MUSK-OX SHOT BY HALL, JUNE 8, 1869.

Game was thrown right in their path. The country all the way from King William's Land was full of it; and as Hall wrote these words, and remembered that much small game—as geese, partridges, and marmots—had also been seen before reaching Cape Weynton, he added: "O, that I could have met Crozier and his party twenty-one years ago with the facili ties I have had on this journey. I am sure I could have saved the whole company. I say it with no egotistical feeling, but with a confidence of what I know of the country." The proof of what he thus says of his own "facilities"—*i. e.*, the friendliness* and aid of the natives as interpreters, guides, and hunters—was afterward found in the summing up of the prizes secured on this trip; for when he arrived at his old encampment on Repulse Bay, the footings



LADLE MADE FROM THE HORN OF A MUSK-OX BY NEITCHILLE NATIVES.
(Presented to Hall as to an *an-ge-ko* by an Innuit mother as pay for curing her sick child.)

* But, as has been already noted, he had, some time before this date, discovered from the confession of the Neitchille men that their friendliness to Crozier had soon exhausted itself. They had let him and his party starve. Hall had sharply rebuked their selfishness, and his last hope of Crozier's living any length of time after his starting from the ships had died out. But it must be remembered that the few Innuits who found Crozier may have been alarmed lest the number of the white men would exhaust their own scanty supplies. Self-preservation may have caused their slipping off in the night.

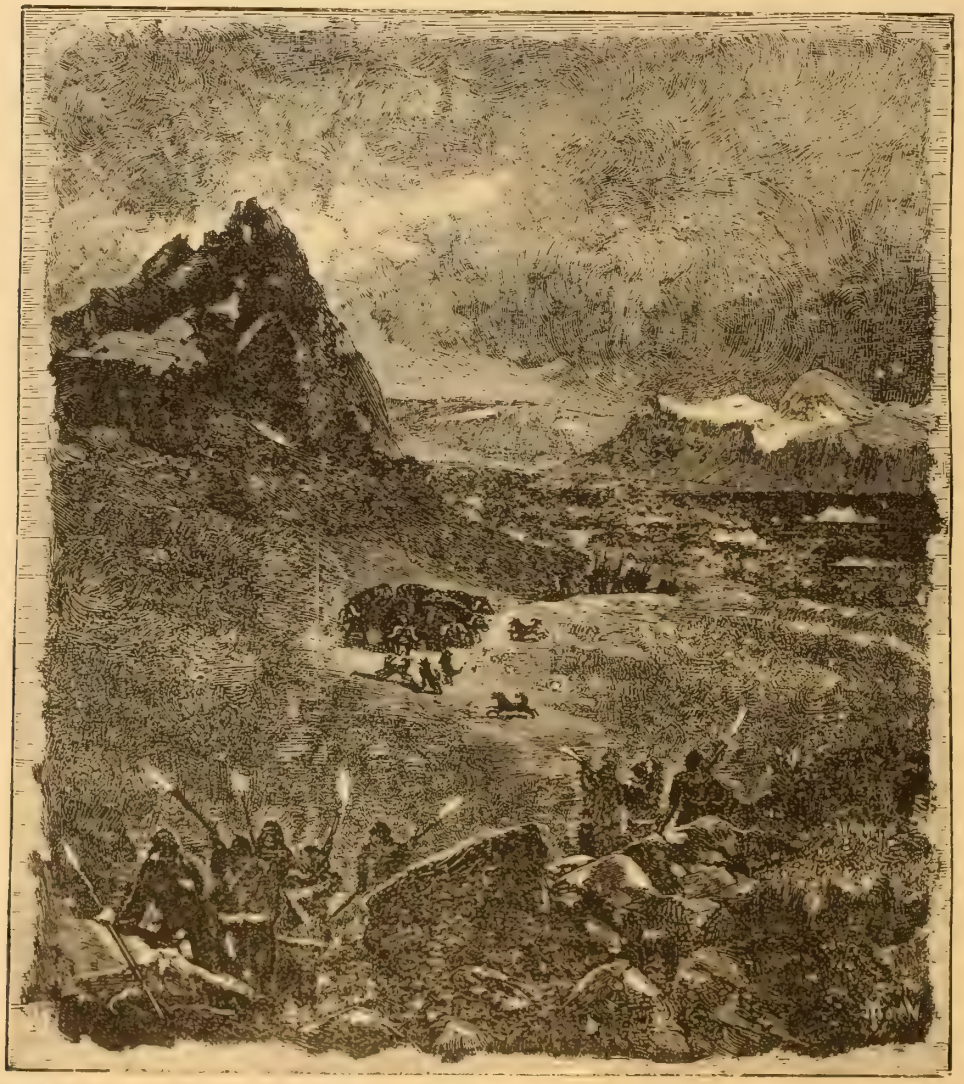
read: "Musk-cattle killed, 79; deer, 18." The skins of the musk-cattle weighed 873 pounds. The weights in gross of the two sledges from the date of May 28, including the weight of provisions, heavy boxes of Franklin relics, the musk-ox meat and skins, and the passengers who rode, had sometimes exceeded 300 pounds for each dog of the team.

HORNS OF A DEER SHOT BY HALL, 1869.

The striking points of the most successful of the musk-ox hunts are illustrative of Innuit customs and of the habits of the ox when attacked. The fight was at the place marked on the map of this chapter as Encampment No. 44, where two bands were successively seen. When the first of these was surrounded, as soon as they perceived that the dogs were slipped, they formed into their usual one circle of defense, "a musk-bull battery of nine solid battering heads and twice the number of sharpened horns." The dogs were quickly at these heads, barking and jumping back and forward, while the hunters made no haste to advance, for they knew that the bulls would stand their ground all day if no other enemies came.

"After a few minutes' watch of the movements of dog versus bull and bull versus dog," the old hunter, *In-nook-poo-zhee-jook*, went forward to within twelve feet of a large bull, carrying a lance which had a line attached by which he could draw it back; but at his second throw, the wounded and infuriated bull made a fearful forward plunge, from the effects of which the hunter and his companions escaped only by a very timely jump to the left The bull was soon again brought to bay. *Ou-e-la* then pulled trigger on another "noble bull of the circle

of defense, and *Pa-pa* shot the one which had been lanced, when at the noise of these guns the whole circle bolted away except two, who stood their ground side by side long after the whole fight was ended,



and even when the dogs were driven away from them and stones had been thrown. Instead of moving, each of these two kept throwing his massive head down between his fore feet, rubbing the tip of each

horn against the fore leg as one would rub a razor on a strop. This is the animal's habit unless he finds himself, when attacked, near some large stone which he may use for the same purpose of sharpening his horns. The work of death upon the others of this band and upon the second band, was completed by the rest of Hall's men with guns, spears, and the bow.

On the 20th of June, 1869, this three months' journey was ended by Hall's arrival at his old quarters. After a friendly talk with the natives of the bay on whose shores he and his party were again safely quartered, he promptly wrote out for his friend Mr. Grinnell a letter which might reach the United States before he himself could return. It so fully states the facts of this weary but most important of his journeys, that its proper place seems to be at this point of the history.

Letter from Capt. C. F. Hall to Mr. Henry Grinnell.

REPULSE BAY, *June* 20, 1869.

DEAR SIR: This day I have returned from a sledge journey of ninety days to and from King William's Land. It was my purpose (and every preparation was made) to make this journey last season; but my attention then having been called to Mellville Peninsula, in the vicinity of Fury and Hecla Straits, where native report had it that white men had been seen, I directed my expedition there by way Am-i-toke, the Oo-glit Isles, and Ig-loo-lik, with the ardent hope and expectation of rescuing alive some of Sir John Franklin's last companions.

The result of my sledge journey to King William's Land may be summed up thus: None of Sir John Franklin's companions ever reached or died on Montreal Island. It was late in July, 1848, that Crozier and his party of about forty or forty-five passed down the west coast of King William's Land in the vicinity of Cape Herschel. The party was dragging two sledges on the sea-ice, which was nearly in its last stage of dissolution: one a large sledge laden with an awning-covered boat, and the other a small one laden with provisions and camp material. Just before Crozier and party arrived at Cape Herschel, they were met by four families of natives, and both parties went into camp near each other.

Two Eskimo men, who were of the native party, gave me much sad but deeply interesting, information. Some of it stirred my heart with sadness, intermingled with rage, for it was a confession that they, with their companions, did secretly and hastily abandon Crozier and his party to suffer and die for need of fresh provisions, when in truth it was in the power of the natives to save every man alive.

The next trace of Crozier and his party is to be found in the skeleton which McClintock discovered a little below, to the southward and eastward of Cape Herschel; this was never found by the natives. The next trace is a camping-place on the sea-shore of King William's Land, about three miles eastward of Pfeffer River, where two men died and received Christian (?) burial. At this place fish-bones were found by the natives, which showed them that Crozier and his party had caught while there a species of fish excellent for food, with which the sea there abounds. The next trace of this party occurs about five or six miles eastward, on a long, low point of King William's Land, where one man died and was buried. Then, about south-southeast two and a half miles further, the next trace occurs on Todd's Islet, where the remains of five men lie. The next certain trace of this party is on the west side of the islet, west of Point Richardson, on some low land that is an island or part of the main land, as the tide may be. Here the awning-covered boat and the remains of about thirty or thirty-five of Crozier's party were found by the native *Poo-yet-ta*, of whom Sir John Ross has given a description in the account of his voyage in the Victory in 1829–'34.

In the spring of 1849, a large tent was found by the natives whom I saw, the floor of which was completely covered with the remains of white men. Close by were two graves. This tent was a little way inland from the head of Terror Bay. In the spring of 1861, when the snow was nearly all gone, an Eskimo party, conducted by a native well known throughout the northern regions, found two boats, with many skeletons in and about them. One of these boats had been previously found by McClintock; the other was found lying from a quarter to a half mile distant, and must have been completely entombed in snow at the time McClintock's parties were there, or they most assuredly would have seen it. In and about this boat, beside the skeletons alluded to, were found many relics, most of them similar in character to those McClintock has enumerated as having been found in the boat he discovered.

I tried hard to accomplish far more than I did, but not one of the company would on any account whatever consent to remain with me in that country and

make a summer search over that island, which, from information I had gained from the natives, I had reason to suppose would be rewarded by the discovery of the whole of the manuscript records that had been accumulated in that great expedition, and had been deposited in a vault a little way inland or eastward of Cape Victory. Knowing as I now do the character of the Eskimos in that part of the country in which King William's Land is situated, I cannot wonder at nor blame the Repulse Bay natives for their refusal to remain there, as I desired. It is quite probable that, had we remained there as I wished, no one of us would ever have got out of the country alive. How could we expect, if we got into straitened circumstances, that we would receive better treatment from the Eskimos of that country than the 105 souls who were under the command of the heroic Crozier some time after landing on King William's Land? *Could* I and my party with reasonable safety have remained to make a summer search on King William's Land, it is not only probable that we should have recovered the logs and journals of Sir John Franklin's Expedition, but have gathered up and entombed the remains of nearly 100 of his companions; for they lie about the places where the three boats have even found and at the large camping-place at the head of Terror Bay and the three other places that I have already mentioned. In the cove, west side of Point Richardson, however, nature herself has opened her bosom and given sepulture to the bones of the immortal heroes who died there. Wherever the Eskimos have found the graves of Franklin's companions, they have dug them open and robbed the dead, leaving them exposed to the ravages of wild beasts. On Todd's Island, the remains of five men were *not* buried; but, after the savages had robbed them of every article that could be turned to account for their use, their dogs were allowed to finish the disgusting work. The native who conducted my native party in its search over King William's Land is the same individual who gave Dr. Rae the first information about white men having died to the westward of where he (Dr. Rae) then was (Pelly Bay) in the spring of 1854. His name is *In-nook-poo-zhe-jook*, and he is a native of Neitchille, a very great traveler and very intelligent. He is, in fact, a walking history of the fate of Sir John Franklin's Expedition. This native I met when within one day's sledge journey of King William's Land—off Point Dryden; and, after stopping a few days among his people, he accompanied me to the places I visited on and about King William's Land.

I could have readily gathered great quantities—a very great variety—of RELICS of Sir John Franklin's Expedition, for they are now possessed by natives all over the Arctic Regions that I visited or heard of—from Pond's Bay to Macken-

zie River. As it was, I had to be satisfied with taking upon our sledges about 125 pounds total weight of relics from natives about King William's Land. Some of these I will enumerate:

1. A portion of one side (several planks and ribs fast together) of a boat, clinker-built and copper-fastened. This part of a boat is of the one found near the boat found by McClintock's party. 2. A small oak sledge-runner, reduced from the sledge on which the boat rested. 3. Part of the mast of the Northwest Passage ship. 4. Chronometer-box, with its number, name of the maker, and the Queen's broad arrow engraved upon it. 5. Two long heavy sheets of copper, three and four inches wide, with countersunk holes for screw-nails. On these sheets, as well as on most everything else that came from the Northwest Passage ship, are numerous stamps of the Queen's broad arrow. 6. Mahogany writing-desk, elaborately finished and bound in brass. 7. Many pieces of silver-plate, forks, and spoons, bearing crests and initials of the owners. 8. Parts of watches. 9. Knives and very many other things which you, Mr. Grinnell, and others interested in the fate of the Franklin Expedition will take a sad interest in inspecting on their arrival in the States. One entire skeleton I have brought to the United States.*

The same year that the Erebus and Terror were abandoned one of them consummated the Great Northwest Passage, having five men aboard. The evidence of the exact number is circumstantial. Everything about this Northwest Passage ship was in complete order. It was found by the Ook-joo-lik natives near O'Reilly Island, lat. 68° 30′ N., long. 99° W., early in the spring of 1849, frozen in the midst of a floe of only one winter's formation.

Unwilling to leave any means untried which might add to what information he had gained on King William's Land, at Todd's Isles, and on the return journey, Hall kept up numerous inquiries of *Innook-poo-zhee-jook*, even after the date of this letter to Mr. Grinnell. An example of his conversations now held, will show his manner of questioning, in order to elicit hopefully the truth from this native of whose accuracy he sometimes speaks distrustfully. In Book B, for-

* After much hesitancy as though he might have done wrong in this, some time after his return, Hall placed the carefully-preserved remains in the charge of Mr. Brevoort, of Brooklyn, who transferred them to Admiral Inglefield, R. N., to be forwarded to England. Subsequently (by the plug of a tooth) the skeleton was identified as the remains of Lieutenant Vesconte, of the Erebus. (See Geographical Magazine, London, for April, 1878.)

warded after his return (as has been noted on page 339), for Lady Franklin's perusal, he had written:

FRIDAY, *July* 2, 1869.

Interview with In-nook-poo-zhee-jook; Hannah my interpreter. Time, about noon.—My first words are that I am about to leave this country for the United States of America; I wish him to tell me the particulars he can think of relative to the white men who died, many years ago, at Ki-ki-tuk, and of the boats he found on that island; of the ship he has also told me about before, that came down to Ook-joo-lik, &c. I also add that I wish him to be very particular to tell me just what he remembers; to tell the truth and the truth only.

Question. Who were with you when you found those two boats?

Answer. His brother's son *Oo-ar-zhoo*, now dead; *Ook-pik*, *Ek-ke-pe-re-a*, and his own son, *Neer-kood-loo*. The party of men numbered five, and their families were with them. They were making a tour on purpose to search after such things as they could find that belonged to the white men that had died on King William's Land.

Question. What particular time of the year was it?

Answer. Thinks the time of the year about when we returned to this bay encampment,—June 20. Water had begun to make on the ice, and water is a little later making there than here. Snow and ice were inside the boats, and all around.*

Question. Did the boats look as if anybody had visited them within two or three years?

Answer. Somebody had been to one of them, for everything was gone out of it.

Question. What did you find in the other boat—the one that the white men (McClintock's party) from Ik-ke-hi-suk (Bellot Strait) did not find?

Answer. Six paddles; many table-knives, white handles; one watch; a spy-glass that his son has, a little longer than Joe's—something like my compass, but no glass about it; tobacco that had been wet and was in flakes or thin pieces; very many tin dishes; one whole skeleton with clothes on,—the flesh all on, but dried; many skeleton bones; three skulls. Alongside of the boat a big pile of

*In a previous conversation the native had said that he had found the boats in 1861. "After seeing *Dr. Rae* on his outward journey (1854), he came down to Iwillik and staid there three winters; then he spent at Pelly Bay two winters; then he spent on Neitchille one winter; and, the following spring, went to King William's Land." Which Hall reckoned up thus: Repulse Bay, three winters, or 1854–'55, 1855–'56, and 1856–'57; Pelly Bay, two winters, or 1857–'58 and 1858–'59; Neitchille, one winter, 1859–'60; King William's Land, one winter, 1860–'61. Then in the spring of 1831 found the boats.

skeleton bones that had been broken up for the marrow in them; they were near a fire-place; skulls among these. The number of them *ama-su-ad-loo* (a great many)—cannot tell how many. It is certain that some of the men lived on human flesh, for alongside of the boat were some large boots with cooked human flesh in them.

[Hannah here told Hall that from all which had been said by *In-nook-poo-zhee-jook* and the other Innuits met with at the twenty-seventh encampment of their late journey, she was satisfied that *after* Crozier's party left the place where the two boats were found and the large tent at or near the head of Terror Bay, the starving seamen who remained at or about the boats no longer restrained themselves from satisfying their hunger. The Innuits do not believe that human flesh was used by Crozier or by any one about him.]

Hall adds in regard to the boat: The sledge-runner I have (deposited after his return at the Smithsonian) is part of the sledge on which was this boat which the white man did not find.

Question. Did you see any papers with marks on, the same as I am now making?

Answer. No; but saw a great many like the paper of the book by my (Hall's) side (McClintock's Voyage of the Fox).

Question. What was the size of the tent?

Answer. Never saw the tent itself, but only the tenting-place; judging from the appearances, the tent must have been as long as to the further end of *Ar-mou's* tent from where he was sitting. (Hall measured this distance to be 22 feet.) The tent was on some rising ground, *trow-puk* (sandy), overlooking the sea, about as far off as an islet pointed out—half a mile. Three graves were near the tenting-place.

On showing *In-nook-poo-zhee-jook* the large Admiralty chart, he pointed out the place of the tent on Terror Bay, and said that when his party visited the tenting-place they followed the coast around to the northward and westward until they arrived at the extreme west point, and then turned to the eastward, where they found at last the boat which the white man from Ik-ke-hi-suk (Bellot Strait) had found before them. Further on, about half a mile (as he now shows by the islet before referred to) they found the other boat. The distance from the boats to the tenting-place could be made by a smart walk throughout a long day, following the coast-line. When he first found the boats (in 1861, as made out by Hall), the ice between Cape Crozier and Admiralty Inlet was very rugged and heavy, but the next year it was all smooth. He thinks from the kind of ice seen

on this second visit, that there is *occasionally* a season when a ship can sail through that strait (Victoria Strait). *In-nook-poo-zhee-jook* further said that before he visited Ki-ki-tuk (King William's Land) a Neitchille Innuit found a large knife under some stones; and he pointed out the place as Livingston Point, south side of Latrobe Bay.

Question. Was not this knife placed there by some Innuit? No. Did the white men from Ik-ke-hi-shuk place it there? No; but those white men did put some things on the land in another place far off from there: among them a small gun (like Hall's—a revolver). These things the Innuits found and took. *Koong-ou-e-look*, at Pelly Bay, has the revolver.

"Had I known this," adds Hall, "when I met *Koong-ou-e-look* at our thirty-seventh encampment on Becher River, I would have got sight of this stolen revolver which Lieutenant McClintock so unfortunately deposited in the land of thieves. The Neitchille Innuits will steal whenever they can get a chance—even one Innuit from another. When I escaped from this latter evil on my late sledge journey to King William's Land it was because 'Jerry' told *Juk-kee-ta* (Jerry's own cousin) to tell all the Innuits about us when at that twenty-seventh encampment, near Cape Dryden, that they must not steal from the white man (that is from me) or from any of his (my) men; because if they did they would get terribly punished if they ever came to I wil lik, and saw any ship here. This was a sharp, commendable trick, of 'Jerry's' own invention, and it had a most desirable result."

Fuller details of like conversations held about this time, and of some of those held on King William's Land and on Todd's Island, will be found in paper C of Appendix IV. The inquiries and the test questions appear to have been generally close. Instances in which Hall expresses a doubt as to the consistency of the statements made by the natives have been omitted from the extracts, and Arctic travelers will best judge of the value of those which are given; they will remember that natives, when compensated for their talks, may have willingly extended them. Hall certainly liberally paid his friends for their services. He gave *Nukerzhoo*, in 1869, even his boat Sylvia for accompanying him to Ki-ki-tuk, and found that he must

now buy it back if the whalers did not come to take him home. He writes, however, fairly in all cases for or against himself—for or against the character of his information from the natives.

With the unwilling consciousness that he could accomplish nothing of further research in the Frozen Regions, he had now to think of a Return to the United States; purposing there to collate and publish the results of his protracted Arctic experience; then to make his long-meditated voyage to the Pole; and, if possible, afterward revisit King William's Land. In regard this last, he writes:

> Day after day I have been reading and re-reading the books I have with me on Arctic voyages. How my soul longs for the time to come when I can be on my North Pole Expedition! I cannot, if I would, restrain my zeal for making Arctic discoveries. My purpose is to make as quick a voyage as possible to the States, and then, at once, make preparations for my Polar Expedition. I hope to start next spring with a vessel for Jones' Sound, and thence toward the North Pole as far as navigation will permit. The following spring, by sledge journey, I will make for the goal of my ambition, the North Pole. I do hope to be able to resume snow-hut and tent encampment very near the Pole by the latter part of 1870, and much nearer, indeed at the very Pole, in the spring following, to wit, in 1871. There is no use in man's saying, it cannot be done—that the North Pole is beyond our reach. By judicious plans, and by having a carefully selected company, I trust with a Heaven-protecting care to reach it in less time, and with far less mental anxieties, than I have experienced to get to King William's Land. I have always held to the opinion that whoever would lead the way there should first have years of experience among the wild natives of the North: and this is one of my reasons for submitting to searching so long for the lost ones of Franklin's Expedition.

The expression of such purposes, including that of a subsequent return to King William's Land, is certainly remarkable, as coming from one whose sledge journeys only, during the five years which now closed upon him, exceeded the aggregate of four thousand miles. A willlingness "to resume snow hut and tent" would seem explicable

only by supposing that next to the lofty ideas with which his mind enthusiastically invested every thing Arctic, was the extreme of a strange fascination with the uncouth life he had been leading. He says himself, at about this same date, that there was nothing in the way of food in which the natives delighted that he did not delight in, and that this may appear strange to some, but was *true*. He had that day "a grand good feast on the kind of meat he had been longing for—the deer killed last fall; rotten, strong, and stinking, and for these qualities, excellent for Innuits and for the writer."

The six weeks which immediately followed his return to the bay were occupied in completing a sketch of Talloon Bay; in hunting with the natives and in sharing for a time a double *tupik* with eleven of them; in Arctic study and meditations on his next Polar journey; and in preparing for shipment the bone from the whale cached the year previous. He spent several days in surveying, and completed the coast-line by a survey of Talloon Bay, but under trying disadvantages.

No whaling-vessels could be reasonably expected to arrive before the first week of August, nor was it at all certain that any would come in during the season. He had, therefore, again to think of the boat journey which might become necessary to York Factory, the difficulty of making which journey in the frail Sylvia had been considered the year before. No lack of provisions would now be a bar to this voyage, for he had well husbanded his old stores, and the additions made on his recent sledge journey were themselves in excess of all present need. "Really we have been blessed, greatly blessed, in the way of provisions. The amount prepared for and acquired on our

late sledge journey was overwhelming; now there is a considerable sufficiency to take a party from this place to York Factory." These stores were still, however, closely husbanded, and all reliance for the supply of immediate wants was safely placed on new hunts for the deer, the seal, and the walrus. Salmon fishing was also hopefully looked for. Nor were any of these expectations disappointed. The natives from Iwillik, including also some from Pelly Bay and Ig-loo-lik, repeatedly divided themselves into parties for hunting and sealing, and brought in abundant returns. Even *In-nook-poo-zhee-jook* surprised Hall by his quickness in learning the use of the rifle; and *Nu-ker-zhoo* one morning slipped quietly from his bed and killed two large *ook-gooks*. Hall bartered with him for the meat of one of the four which he had killed during the season, in noting which he says, "the skins, blubber, blood, and meat of these animals (especially the first) are very valuable; lashing-lines, draught-lines, seal and walrus lines, and the soles for *kummins* (boots) being made from them." The total weight of one animal was 1,500 pounds. A large number of salmon also were at different times secured near Beacon Hill, the fish measuring from 27 to 32 inches in length, and weighing each as much as 13 pounds. In the beginning of the season they were caught by hook and line from the margin of lake-ice near the shore, where a space had been melted away by the radiation of heat from the adjacent land

What gave him the utmost annoyance was the almost entire demoralization which this very abundance brought upon the natives. They stuffed and stuffed till all their provision was gone, and when they could get no more they were ready to starve. Three-fourths of their food was eaten for the mere gratification of eating; nothing but

feasting and feasting, when possible, was the rule. The worst of the matter was not, however, their sleeping at midday, and devoting the rest to mirth, games, and this feasting; but their making the hunts the occasions for promiscuous concubinage, one example of which will suffice. On the 13th of the month, "Jerry," going off on a hunt in one direction, took with him *Ar-mou's* wife and three children, while *Ar-mou*, in exchange, took "Jerry's" number one wife with her infant as companions on his hunt on a different course; both parties, as was frequently the case, extending their absence, and leaving Hall to support wives number two, as well as the families of others who had gone off, providing them literally nothing to eat. It must be added also, with regret, that like exchanges became habitual while all parties were in their snow huts; and that Hall found it impossible to restrain entirely even his own Eskimo man. Hannah said she "would rather die right away than stay at the bay," and Hall then promised her that she and Joe should return to the United States with him.

The Arctic Temperature during the month of July was high, and rains and storms were frequent. The first day was gloomy, with thick dark rain clouds and a light wind from the southeast; the thermometer reading at noon 48°. Through the night of the second and most of the third, fourth, fifth, and sixth the rains were heavy; the storms coming generally from the south, southeast, and northeast. The tenth, eleventh, and twelfth were hot days, although the wind was from the north-northwest; the lowest readings of the thermometer were at night 40°, 43°, and 46°; and the highest at noon (at 3 p. m. on the twelfth) were 60°, 65°, and 71°;—temperatures spoken of as very

uncomfortable for Arctic denizens A storm on the 19th was accompanied by sharp lightning.

The plains were now purple with the wild saxifrage (*Saxifraga oppositifolia*); its beautiful flowers followed by those of other floral tribes, clothed the earth with carpets of gold, crimson, blue, white, pink, and straw color. The *Andromeda tetragona*, so often named as the shrub-fuel, itself bore pretty flowers. Hall's collection of wild flowers embraced a dozen varieties.

Mosquitoes first appeared on the 7th of July, and afterwards on his trips to Talloon they were exceedingly troublesome.

He records an experience of one walk:

> The sun was about 5 degrees high. Not a breath of air stirring, the sun shining hot, and the mosquitoes desperately intent on getting all the blood of the only white man of the country. I kept up a constant battling with my seal-skin mittens directly before my face, now and then letting them slap first on one and then on the other of my hands, which operations crushed many a foe. It seemed to me at times as if I never would get back. Minutes were like hours, and the distance of about two miles seemed more like half a score. At length I got back to my home, both temperature and temper high. I made quick work in throwing open the canvas roof of our stores, and, getting to our medicine-chest, snatched a half-pint bottle of mosquito-proof oil, and with a little of this besmeared every exposable part of my person. How glorious and sudden was the change. A thousand devils, each armed with lancet and blood-pump, courageously battling my very face, departed at once in supreme disgust at the confounded stink the coal-oil had diffused about me.

The questions of the way of return to America remained an unceasing anxiety. In case no vessel should come into the bay, it was quite uncertain whether he could get any of the Innuits to accompany him on a boat voyage down the Welcome from which to proceed to York Factory on Hudson's Bay, or even to seek in the Welcome for a ship which might be bound for the United States. "Other matters also,

in this connection, weighed heavily on his mind:—to attempt to reach the Factory in such a frail boat as the Sylvia along a well-known most treacherous coast and without even a chart of it:—Could he even with a trust-worthy crew commit his notes and journals of what he had acquired relative to the Franklin Expedition by five years' adventurous life among a savage people to the fortune of so desperate a boat voyage." As for the whalebone and musk-cattle skins, his Arctic library and other things of personal value, he thought it his duty to abandon them if compelled to make such a voyage; the relics, manuscripts, and documents being the only things of which he earnestly desired the absolute safety.

An almost equal anxiety was found in the attempted recovery of the whalebone cached the previous year. Several searches were early made with probings and much labor down into the ice and snow, but these were premature. On the 15th of the month a successful opening was secured. The huge snow-bank over the long-covered bone had yet melted only enough to expose the tips which still stood upright; but when recovered from its icy bed the bone was sledded overland to a point opposite the usual anchorage of the whalers; and, after many days' work, Hall found that he had gummed with assistance from the natives 534 slabs, weighing nearly 800 pounds. On the sale of this and of some of his musk-ox skins he depended for the payment of such costs of the expedition as were not yet provided for, especially for the payment of the sums due to the four white men of his party of 1868.

And now the final relief for all anxieties appeared even earlier than he had looked for its coming. On sighting the Ansell Gibbs, of New Bedford, August 5th, he entered in his journal, "It is now certain I shall not be obliged to make the dangerous boat journey to York

Factory; God be praised, for he doth continually bless me." A few days after this, such stores and provisions as would not be needed were liberally distributed among his Innuit friends, with whom he spent a whole night in feasting and in a last talk about the lost ones of Franklin's Expedition. In the morning, four boats, manned by the natives, carried out to the Ansell Gibbs all the bone, and with it sixty-eight musk-ox skins, and all the journals and note-books of this five-year Arctic residence. At midnight, Hall, with Eskimo Joe, Hannah, and her adopted child *Pun-na*, were safe on board Captain Fisher's vessel, bound for a short cruise down the Welcome, and thence to the United States. In noting his leave-taking of the Innuits, he records some strong expressions of a regret at parting from those with whom he had companied so long; adding that they had learned to call him "father," and that for their sakes he would try to persuade the Hudson Bay Company to establish a factory on Repulse Bay, as an enterprise hopeful of good to both parties. He was now certainly well prepared to judge of this, for his acquaintance had extended itself to a number of tribes inhabiting the middle region of the Continent, and to this acquaintance was added his previous two years' experience with those on the east side—on Cumberland Gulf—as well as his visit to Greenland.

The Ansell Gibbs left Repulse Bay on the 13th, but remained at and near Whale Point, (the spot on which Hall had hoped first to land in 1864,) until the 28th, Captain Fisher here employing his crew in further boat expeditions in search of whales. Hall and Ebierbing frequently engaged in hunting on shore, securing a large number of deer. Including the net products of a Polar bear, also killed by the two

hunters, the total weight of meat placed on board the ship for their crew fell but little short of 3,000 pounds, the result of nine days' work. The story of a hazardous adventure with the Polar on the 26th is thus told:

Having made some astronomical observations, I commenced computing them, and had not been long occupied before Joe cried out "*Ni-noo! Ni-noo!*" when at once I dropped pen and journal and jumped out of tent, and took a look in the direction Joe pointed, which was to Whale Point; and surely there was the "*Ni-noo.*" We watched it for a moment, and saw it walk about, make a plunge into the sea, and then return to the land, when it walked up on the hill-side of Whale Point and then lay down.

We were not long getting ready for the prospective adventurous bear-hunt. I say *adventurous*, for in truth we knew it to be so. We had no dog and no spears with which to defend ourselves in case our fire-arms failed to kill outright on the first shot; and then, to make matters more uncertain, our percussion-caps could not be depended on; quite a proportion of them fail to take fire. If we should happen simply to wound the bear, that would make it furious, and there was no telling the end of its human slaying. It might, as we all thought, make its way to the tent during the absence of myself and Joe, and before we could come to the rescue of Hannah and little *Pun-na* they might be killed by the wounded and enraged monster beast. With all this no very flattering view of the case we concluded, however, to go for the hunt. As Joe and myself got about half-way to Whale Point we began to think that the large dirty white mass we saw on Whale Point and took to be the recumbent *ni-noo*, was a large rock; but we kept on our windings and let the ridges of rock-land hide us from view as much as possible. At length we came within a hundred yards of the sleeping big lion of the North, and then behind a gentle sloping hill we watched him. At the same time we were busy putting our fire-arms in complete order for the forthcoming fray. I had buck-shot in the left of my double-barrel; so this charge I drew forth and replaced it with an ounce ball, and then I was ready for a double shot if the case needed it. Our huge rock proved to be the bear after all, as we readily perceived on arriving at the place where we stopped to get our arms ready. As we watched *ni-noo*, we noticed that every few minutes he would raise his long-necked head, turn it this way and that,—look all around, sniff the air,—and then replace it flat down on the smooth rock-bed on which he was then napping.

A fresh breeze was blowing from the southwest, and every now and then my Joe kept plucking out little tufts of deer-hair from his dress, lifting them up,

and giving them to the wind, to be sure that we were keeping our persons aloof from all possibility of the bear scenting us. All sand on and about our boots was carefully brushed off, so that our last stragetic advance toward the bear might be made without making any noise, for all our precautions and movements were needed to be from sharper forethought and ready wit than are required in deer-hunting; so we acted accordingly. At length, at the end of half an hour, we left our final preparation spot, and, under the shelter of the rocks, stealthily, slowly, and, I must confess, with hearts thumping pit-a-pat, advanced directly toward the still sleeping, but now and then awaking, beast of the icy wilderness. Every few steps we would raise the heads of our low-bended bodies to catch a view of the awaking of our foe until we finally reached the spot we desired, which was within easy gunshot. It was quite certain that we had the bear to kill outright, or he would kill us if only wounded; for on the discharge of our arms we should have nothing whatever with which to defend ourselves. The time came when signals passed between myself and Joe; he fired, and the next instant the charge from my right barrel followed. Joe's ball penetrated the brain through the skull in front, knocking the bear stiff; mine ploughed its way through the jugular of the neck. So *ni-noo* was twice killed instantly. It proved to be a she-bear, very fat, but without a particle of anything in her paunch. We skinned and quartered and placed all underneath the skin, close by a rock, and ready for the Ansell Gibbs.

The whaler left the Welcome on the 28th, passed through Hudson's Bay and Straits without the occurrence of any incident of unusual interest, and came into the harbor of New Bedford, Mass., September 26th.

When nearing the light-house off Nantucket, Mass., Hannah and and her child doffed their native dresses for those of a civilized land. At the Parker House, New Bedford, Hall made his last journal entry: "September 26, 1869, 2 p. m.:—How thankful to High Heaven ought my poor heart to be for the blessed privilege of again placing my foot upon the land of my country."

He immediately telegraphed his arrival to Mr. Henry Grinnell, expressing his hope of seeing him in a few days in New York. Within the next month, he was at work in that city for the North Polar Expedition of 1871.

CONCLUSION OF THE NARRATIVE.

It will not be expected that Hall's biography will be found here. His three Expeditions, together with the weary labors of the years of preparation which preceded each, are his true memorials. The Narratives of his first voyage and of his third (the Polaris) sufficiently disprove the idea which has been sometimes hastily expressed that he was an ignorant and visionary dreamer; and the impress on the minds of any who may inspect the precise and often graphic journals of the years with which the present Narrative has had to deal, will be that which the evidences of a frank truthfulness create: the manifestation of an indomitable will, energy, and perseverance in the devout pursuit of a single object. He believed it attainable, and believed himself called to it as to his life-work.

The testimony of one who, next to the late Mr. Grinnell, could most justly estimate his character, is emphatically clear on the points that "Hall was a single-minded trusting man, who believed that others were like himself. His enthusiasm concerning his favorite objects was extreme and abiding, and gave tone and color to all his words and acts. His very want of general knowledge and his defiencies in special departments of science made him more fit for an explorer than a scholar or scientist could have been. He looked upon explorations and all which appertained to the increase of geographical knowledge as far above all else; and this childlike or single purpose explains the man's career. The more information he could gather, the happier he

felt. It was, indeed, the disappointment produced by the obstacles thrown in his way on his third Expedition, which probably caused his death on the Polaris in November, 1871." With this estimate, deliberately formed by Mr. Brevoort, of Brooklyn, from personal and close acquaintance, the judgments of a number of other friends have been found to coincide. In preparing this Narrative they have been the more willingly received in the lack of all personal acquaintance with Hall.

Official and public acknowledgments of Hall's worth have freely appeared—in the language of the National Academy of Sciences before quoted, in the appointment conferred on him by the Executive of the United States in 1871, in the award of the gold medal made by the Paris Geographical Society in 1876,* and in the courteous tributes paid at his grave by the late English Arctic Expedition under Captain Nares.

The extreme discomforts, exposures, and labors incident to a residence among the Eskimos were not unforeseen when he entered on even his first Expedition; and his experience then must have led him to anticipate that greater trials would be his lot on a second and longer banishment from civilized life. But he avowed, as has been seen, a willingness to remain out for a term of even ten years, if this should prove a necessity. He must have felt that he could trust his two Eskimo friends throughout a protracted stay in a country in which they would find themselves among their own race, and yet it is surprising that, even with their unchanging help, he could control unharmed so many of the Innuits, subordinate their chief, *Ou-e-la*, to his purposes, and, with such slender resources, secure the success he attained. His

* For a *fac-simile* of this medal and a translation of the report made by Mr. V. A. Malte Brun to the Société de Geographie of Paris, who conferred it, see Chapter XXV of the "Narrative of the North Polar Expedition of 1871."

notes say: "Nothing but an experience of years could enable me to control such untamable eagles." Unquestionably, the known presence of the whalers in Repulse Bay had much to do with his maintenance of authority, and next to this was his ability to supply the wants of the natives when suffering; and yet, perhaps, above both of these must be placed his politic concession to their low prejudices and his self-control. Very frequently in the journals appear proofs of his hasty judgments, and of suspicions of evil intended against himself by the whaling captains as well as by the Innuits; but as frequently appear also proofs of his repressing such feelings, and recording his regrets at his having given place to them in his notes or in his heart. The numerous delays experienced by his restless spirit from the indolence and especially from the superstitions of the natives—delays at critical times too—were trying to his temper. They were placed to the wrong account when they gave room for his imagination to credit them to purposes of evil design. But his feelings were naturally stirred with something besides pity when he found himself unable to obtain proper subsistence in the hut or move forward on a journey, because the Innuits would neither eat nor suffer others to eat a certain kind of food on a given day, or work until a certain time had passed:—To estimate all of which aright, Hall must be thought of as a single white man, alone among the degraded and habituating himself to such degraded modes of life with them as can be excused only in the light of his subordinating everything to his one purpose, and the necessity of his so living in order to avoid the visits of scurvy.*

* In confirmation of the opinions just expressed, as derived from Hall's journals, the following extracts are given, by permission, from the journal of Mr. William Crane, jr., of Baltimore, Md., who in the summer of 1867 visited Hall from the Era, commanded by Capt. George E. Tyson.

"THURSDAY, *August* 15, 1867.—At 12 m., took in sail and ran in under jib and foresail into a

It will be a harsh criticism which pronounces his judgment defective, or its exercise hasty. He demonstrated the correctness of his belief in the possibility of living for a long period out of the pale of civilized life by his own passing through such a term without extreme suffering or any long illness. He was not, then, far out of the way in judging that some of Franklin's men also might have been found so living, and even for a period of ten years.

His ability, industry, and perseverance, manifest in the endurance of so long an absence from the endearments of country and home and in his subjection to the revolting customs of the degraded around him, are yet more manifest in the victories over what again and again

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cosy harbor formed by three small islands at the head of Repulse Bay, lat. 66° 26′ N., long. 86° 22′ W. Mr. Hall's (the Arctic explorer) tent and quarters are on headland to the westward of us.

"FRIDAY, *August* 16, 1867.—* * * * Coming aboard at 4 p. m., found the ship crowded with natives; the first I have seen. Mr. Hall and party, sent out by Mr. H. Grinnell, of New York, came aboard and were hospitably received. Accepted an invitation to visit Hall ashore; shall probably do so to-morrow. Conversed for fully an hour with the explorer. Found that he had read almost everything that had ever been written on the subject of Arctic exploration. Judging from his conversation, I should not call him an educated, but certainly an intelligent man.

"SATURDAY, *August* 17, 1867.—Called upon Hall as I was returning from an expedition to the mainland. His *tupik*, or seal-skin tent, was pitched not very far from our anchorage, on the side of a rocky headland called by the natives *Tita-tow-yak-loo-lik* (Bloodless Land), and which I subsequently discovered was the southernmost point of Melville Peninsula. When I visited Hall ashore, I found him "at home" amid the usual repugnant accessories of Arctic life, clothed in Innuit costume, seated *à la Turc* on a deer-skin rug; an Innuit squaw on one side and her husband on the other. An intelligent looking native dog crouched lazily at his feet. These three companions, the Esquimaux man, woman, and dog, I was afterward informed, had been the explorer's constant and faithful adherents in all his perilous wanderings. Hall's quarters in no wise differed from the Innuit habitations generally. Their interior presented fully as repulsive a spectacle as I had ever witnessed in any African hut or Indian wigwam. I was told by him that this mode of life was entirely from choice, and that in accommodating himself to it he was only preparing for future struggles against the rigors and perils of this frightful climate. He said that he felt capable of enduring severer hardships than ever he had yet undergone, and was satisfied that in accustoming himself to native habits and native diet he was adopting the only sure method of escaping the great Arctic curse—scurvy. During our short sojourn in Repulse Bay I had repeated long and interesting conversations with him. He had then just returned from a long sledge journey to the westward, and was contemplating another, which would be still further westward, to King William's Land in February. If this expedition realized his expectations, he proposed to return as soon as practicable to the United States, when he would endeavor to enlist the aid of the Government, and extend the scope of his explorations so as to embrace the discovery of the Northwest Passage."

seemed to be insurmountable obstacles. Through the years of struggle for an outfit, hope was more than once instantly crushed at the moment when success seemed sure; at the time of his first landing in the Arctic Regions the mistake of his captain cost him a whole year's advance; on his first practicable forward movement his frightened party turned back his steps; when provisions and stores were again ready he could secure no team; and after a severe journey in mid-winter, on his return could obtain no men;—and when at last, in the fifth year he stood on King William's Land, it was to be hurried away before the summer's sun could lift the snow-pall from the treasures he was seeking.

Would it not have been the record of many others that, after grappling with some only of such difficulties, they would have found themselves at the close of any one year of disappointment safe on board a hospitable whaler? Would not many have justified themselves when returning to their country and reporting insuperable obstacles? Expeditions largely equipped, and led by men of Arctic experience and of brave heart, have more than once so returned to be justified and honored by their countrymen. Hall had an unconquerable determination to accomplish something, and if this be called a mere enthusiasm, it was an enthusiasm which led him to endure and fight his way and patiently await new issues, and again endure and fight and conquer. Without such an iron will he would never have remained within these desolate regions through five Arctic winters enduring the squalid wretchedness of the snow-huts; nor have made his sledge journeys to Pelly Bay, to Cape Weynton, to Ig-loo-lik, to Fury and Hecla Straits, to Lyon's Inlet, and to King William's

Land, aggregating more than 3,000 miles. His voyage out and return, his surveying work around Repulse Bay, and the sledge journeys just referred to, foot up in miles a considerable excess over the figures 10,000.

It has not been out of place to say that, besides the extreme of enthusiasm, a fascination for Arctic life seems to have laid hold upon him—the fascination which in one or another form makes the traveler restless while off from his journey, as it does the sailor when off the sea. If it seem strange to the landsman that the shipwrecked mariner is ready for a new cruise, and, in his own feelings, safer in a storm on the sea than on the land, it is as strange to contemplate the eager return to Arctic adventure and dangers by such sufferers as Franklin, Back, Richardson, Hall, and their comrades. Faith in an overruling Providence and in the cardinal doctrines of the Christian religion was evidently inwrought in them; in Hall, probably from the date of his earliest home training. Full expression of this is found in his journals.

The weakest part of the record for the years of which this Narrative speaks is, perhaps, his permitting himself to turn aside from his long-proposed journey to King William's Land and lose a year by his visit to the straits of Fury and Hecla. His motive, however, for this was sincerely in keeping with the purposes of the expedition. The *possibility* of yet finding a survivor of Franklin's party again loomed up before his enthusiastic view, and he thought himself fully justified in making search for traces of those of whom the Innuits so confidently and unitedly spoke as existing in the Peninsula. If his judgment was then at fault, his motives were as commendable as they had

been when expressed in the draughting of the plans for his first outfit, or when he wrote in answer to Lady Franklin's proposal that he should go out a third time for the record: "As for pay, I should ask nothing."

Sir George Nares, commanding the late English Arctic Expedition of 1875, has recorded in his official report to Parliament his testimonials to Hall's fidelity as an Arctic explorer:—

"The coast-line was observed to be continuous for about thirty miles, forming a bay, bounded toward the west by the U. S. range of mountains, with Mounts Mary and Julia and Cape Joseph Henry, *agreeing so well with Hall's description*, that it was impossible to mistake their identity. Their bearings also, although differing upwards of 30° from those of the published chart, agreed *precisely with his published report*."

On the 13th of May (1876), in the presence of twenty-four officers and men, Captain Stephenson, of the English Expedition, hoisted the American flag over the grave of Captain Hall, and at the foot erected a brass tablet, prepared in England, bearing the following inscription:

SACRED TO THE MEMORY OF

CAPTAIN C. F. HALL,

Of the U. S. S. "Polaris

Who Sacrificed his Life in the advancement of Science, November 8th, 1871.
This Tablet has been erected by the British Polar Expedition of 1875,
Who, following in his footsteps, have profited by his Experience.

He also reported to Captain Nares that the grave was found in an excellent state of preservation. The willow planted by Tyson was

still alive. The inscription put upon it in July, 1871, by Hall's comrades, still read:

TO THE MEMORY OF

CHARLES FRANCIS HALL,

Late Commander U. S. Steamer Polaris, N. Pole Expedition,

Died Nov. 8, 1871.—Aged 50 years.

"I am the Resurrection and the life: he that believeth on Me though he were dead yet shall he live."

Chapter XJV.

ADDITIONAL NOTES—HALL'S TWO ESKIMO FRIENDS—THEIR RELATIVES—THE GRAVES IN THE CEMETERY AT GROTON, CONNECTICUT.

CHAPTER XIV.

HALL'S ESKIMO FRIENDS:—EBIERBING (JOE) AND TOO-KOO-LI-TOO (HANNAH)—THEIR CHILDREN—JOE'S COUSINS—THE INSCRIPTIONS IN THE CEMETERY AT GROTON, CONNECTICUT.

At the close of this Narrative, it may be conceded as something due in simple justice to the two Eskimos who have been so frequently named within the previous pages, that a few items of their personal history be recorded. Through all the trials of Hall's three expeditions—a period of more than ten years—they were not only his steadfast friends, but indispensable supporters without whom he could never have carried forward his investigations, or have kept, in some emergencies, even his life among the Innuits. Joe Ebierbing was, as has frequently appeared in the Narrative, Hall's dependence as hunter. On repeated occasions, by his native skill in the use of the lance and line and by his readily learned use of the rifle, he procured food in the darkest days of want, not for Hall alone, but often for the less skillful and suffering Innuits around him:—materially aiding Hall by this beyond the bare support of the lives saved, and gaining for the expedition lasting good-will and help. Hannah was perhaps the more intelligent and, as a woman, naturally of quicker perception in the things of every-day life which would serve the necessities of the white man among strangers. She proved an interpreter without whom every effort to understand the natives of Cumberland Gulf, of Repulse Bay, of Ig-loo-lik, of Pelly Bay, or of the country on the route to King William's Land, would have been hopeless—every one of Hall's journeys and talks with the Innuits nearly useless.

But beyond all this, the heroic conduct of these two on the last of Hall's voyages claims a tribute. It must be very plain to every reader of the Narrative of that Polaris voyage that these Eskimos saved the lives of Tyson's party on the fearful ice-floe drift of more than 1,200 miles.

In the early days of that suffering, when the floe was drifting past Cumberland Sound and was nearly opposite their native place, the temptation presented itself to this couple to escape to the mainland. "Father Hall" was gone from them, and, at that time, there were just grounds of fear within their breasts that, in the almost famishing condition of the white men, some of them might make the Eskimos the first victims, if the direst necessity should come.

Hannah listened to no words of such persuasion, but strengthened Joe's purpose to remain; a hunter for the seal and the bear was thus still to be at hand for the saving of men whose skill in such hunts was plainly as unequal to their need as was their diminished strength. Of his true worth in this respect the most convincing proof came toward the last days of those dark months. The story of this is told on the 568th page of Admiral Davis's Narrative, where it will be found recorded that on the 22d of April, 1873, when Tyson's party on the floe, weakened by their six months' exposures, were on that day half-drowned, cold, and almost literally without a morsel of food, Joe, on going out for the fourth time to watch, saw a bear coming toward the party, hurried back for his gun, and, requesting all hands to lie perfectly still, returned with his companion *Hans*,*

* *Hans'* own story of his experience with Hall's party, and with the expeditions of Dr. Kane, Dr. Hayes, and Captain Nares, has been lately published in a translation from the Greenland tongue by Doctor Henry Rink, author of "Tales and Traditions of the Eskimos," and of other works. *Hans'* story of his share in the expeditions will be read with interest;—and his odd account of his visit to Washington, when brought to the city with others of the rescued Floe party.

E. Eskimo girl.

From a photograph by G. W. Pach, New York.

and with his aid instantly killed the ferocious animal. At this point in his Narrative Admiral Davis says: "But for the rifles in this extreme emergency, this story would not have been written."

Joe and Hannah were natives of Cumberland Inlet, where Capt. S. O. Budington, of Groton, first met them in the fall of 1851, on the island of Kim-ick-su-ic,—an island that gets its name from its flat center, which, covered with grass, gives it the look of a *dog-skin.* Captain Budington wintered there (in about lat. 65° 30′, long. 62°) when in command of the McLellan, of New London. Hannah, who was born at Cape Serrel, on the west side of Davis Strait, was at the time of Captain Budington's visit only about twelve years of age, and Joe, who was then married to another woman, seemed to Budington at that time "as old as he does to-day." Cape Serrel was a whaling station, much visited by English and American sailors, and frequented by the Eskimos of Cumberland Gulf for trade. A few years afterward, Mr. Bolby, a merchant of Hull, became much interested in these two persons, and took them with him in his own vessel on his return voyage from the Gulf. In England he treated them as his guests with great liberality. They were married in his house in the presence of a large company, and, with Mr. Bolby, visited, in their native costume, many places in England and Scotland, and were presented to Queen Victoria, and dined with her and the Prince Consort. Hannah always spoke of the Queen as "very kind, very much lady."

Two years afterward they returned to Cumberland Inlet, and there Hall first met them in 1860. Joe had just piloted two English vessels into Cornelius Grinnell Bay through a narrow channel more than one hundred miles in length. Both Joe and Hannah next accompanied Hall through all those investigations which led to the discovery

of Frobisher's Bay and the Frobisher relics; in 1862 they came with him to the United States.

Hannah's willingness to leave her country seems to have been produced by her desire to keep with her, her husband, who was at the time being persuaded to leave her for another wife. His uncle *U-gack* was reported as having had twenty wives, three of them living with him at one time. At the time of Hall's return to the United States, Joe, who had been sick, was ordered by the *an-ge-ko* to take another wife as the only way to get well; but to his own best future success, as is well known, he came over with Hannah to the United States. His father had died when quite young; his half-brother *Ita-loo*, left on the island, was met with in the year 1873 by Captain Greer, U. S. N, of the relief ship Tigress, came with him to New York, spent the winter in Groton, and died shortly after getting back to his native land.

Joe and Hannah, after, as has been shown, assisting Hall in his preparations for the Second Expedition, and closely attending him through the years 1864–1869, again accompanied him on his last voyage in the Polaris, 1871, and returned to the United States with the Floe Party. They were as much attached to "Father Hall," as he was to them.

In a home purchased for them by him, in Groton, Connecticut, they again commenced housekeeping in 1873, readily adapting themselves to the customs of civilized life. Joe became a good carpenter and farm-hand, retaining his old love for fishing. Hannah was soon skillful in making up, with the help of her sewing-machine, furs and other salable articles for the people of New London and Groton.

Their first child, *Tu-ke-li-ke-ta*, had died in New York in the winter

of 1863; the second had been buried on the first sledge journey to King William's Land in 1866; a third, which Joe adopted in 1868, with the consent of its parents and by the gift of a sled to them from Hall, came with him to the United States in 1869. Hannah named this child Sylvia, after her friend Miss Grinnell. The girl was an intelligent scholar at the Groton school until her death in 1875.

The health of this couple had been repeatedly broken during the long period of suffering of the years 1864 to 1869; and they do not seem to have been readily acclimated in the United States. The terrible experience of the ice-floe especially had left severe traces on them. During the year 1876, Hannah suffered much with that fatal disease consumption; a disease which carries off the larger number of her race. It had been long gaining upon her. She bitterly felt the loss of her last child and the absence of her husband, who, after having been again out in the Arctic Regions with Capt. Allen Young, of the Pandora, was then doing good service on board a vessel belonging to the United States Fish Commission. Hannah had become a true Christian; read her Bible, and showed a quiet, good life. After a season of protracted suffering, throughout which she was tenderly cared for by Mrs. Captain Budington and other friends in Groton, she breathed her last, as the old year went out, December 31, 1876, at the early age of 38. Her death was tranquil. Among her last words was the petition, "Come, Lord Jesus, and take thy poor creature home!"

In June, 1878, Joe again sailed for the Arctic zone with the party spoken of in the Preliminary Chapter as sent out by Morison & Brown, of New York, and commanded by Lieutenant Schwatka, to prosecute a renewed search for the records of Sir John Franklin's Expedition. Mr. J. Carson Brevoort, of New York, Mr. J. J. Copp,

Captain Budington, and others, had unhesitatingly renewed their indorsement of the industry, honesty, and truthfulness of this simple-minded Eskimo man, who has received from the United States Government much less compensation for noble services than perhaps any other one of the Polaris Expedition.

MEMORIALS.

In the quiet cemetery on the hillside of Groton may be found a few tombstones set up by its citizens in memory of nearly all the Eskimos who have visited the United States. One of these stones bears the name of him who, going out with Hall, died on board the George Henry while eagerly inquiring as he again neared his native land, "Do you see *ice, ice?*"

CUD-LAR-GO.
Died July 1, 1860.

On another tombstone will be read:

OU-SE-GONG (JEANNIE.)
Died July 1st, 1867. Aged 28 years.

JEANNIE.

Heliotype Printing Co

220 Devonshire Street, Boston

GROTON ON THE THAMES, OPPOSITE NEW LONDON, CONNECTICUT.

Ou-se-gong was a cousin of Joe and wife of *Kud-lup-pa-mune*, known by the whalers as "Abbott."

ABBOTT.

Captain Budington brought these two Eskimos from Cumberland Inlet to New London in 1866; on their return with him the next year, Jeannie died on the voyage.

Two smaller headstones put up for Hannah's children have on them the inscriptions:

TUKE-LI-KE-TA:

Died Feb 28, 1863. Aged 18 months.

And

SYLVIA GRINNELL EBIERBING.

(Punna.)

Born at Igloolik July, 1866.

Died March 18, 1875.

"*Of such is the Kingdom of Heaven.*"

She was a survivor of the Polaris Expedition under Commander Charles Francis Hall, and was picked up with 19 others from an ice floe April 30, 1873, after a drift on the ice for a period of one hundred and ninety days and a distance of over twelve hundred miles.

On a visit to these graves, when making inquiries of Eskimo Joe in regard to some facts for use in this Narrative, he was observed to

kneel at Hannah's grave and carefully weed out the long grass. Then turning to his visitors, he said, "Hannah gone! Punna gone! Me go now again to King William's Land; if have to fight, me no care."

Over the grave of the faithful Hannah, the interpreter of each expedition, and the friend who wept at Hall's burial, has recently been placed an elegant granite headstone, with the monogram J. & H. and an Inscription, designed for her by Mr. J. J. Copp and other true friends.

NOTE.—The usual appellation, *Eskimo*, has been retained for Joe and Hannah throughout this Narrative because they were found to be so named in Hall's journals and by those who knew them while they were in the United States. It has been learned only while printing this last page that Captain Hall said these two *and their people* so disliked the name *Eskimo* as to be offended when they heard themselves so called, instead of *Innuits*. It is perhaps an interesting question whether this preference for the name *Innuit* is to be attributed to any tribal antipathy to the natives residing further east in Greenland. It would seem to confirm the judgment of Mr. Dall, quoted on page 62 of the Narrative.

For further instructive comparisons of the races occupying the Northern Section of the Continent see "Tales and Traditions of the Eskimos," by Dr. Henry Rink. Director for the Danish Government in Greenland. London, 1875.

Tou-k ou-li-too

From a photograph by T. W. Smillie, Washington, D. C.

Heliotype Printing Co., Boston.

APPENDIX I.

ASTRONOMICAL OBSERVATIONS MADE BY C. F. HALL ON HIS SECOND ARCTIC EXPEDITION, 1864–1869.

APPENDIX I.

ASTRONOMICAL OBSERVATIONS, 1864-1869.

NOTES ON THE OBSERVATIONS.

Hall took with him in 1864 two sextants, a box and a pocket chronometer, several compasses, and a dip-circle; the last instrument and one of the sextants being loaned to him from the United States Coast Survey.

From the experience of his first expedition, and from some further practice in the use of instruments after his return to New York, he hoped that he would succeed in making some observations of scientific value, as well as extend the knowledge of Arctic geography.

In considering the observations here given, due allowance will be generously accorded for errors for which he was not fully responsible. His own frank statements of the extremely defective condition of his instruments have been more than once noted in the preceding pages. His sextants were soon out of order. The silvering of their mirrors in the Arctic winter cracked off, and their screws and joints loosened by the inequality of expansion. He did not consider the work done, with even the Coast Survey pocket sextant, good work; and often expressed the regret that no labor or ingenuity of his could remedy the defects caused by the influences of the Arctic exposures to which all of his appliances were subjected. The dip-circle was broken in 1864.

The chronometers showed themselves, at first, to be good time-keepers, but the roughness unavoidable in handling and transporting them across the ice-floes soon disturbed their rates; and in the last year of the expedition they more than once ceased to run.

The compasses were doubtless good; his perplexity in regard to their work arose, perhaps, chiefly from changes in the direction and force of the magnetic influences in regions subject to sudden and powerful fluctuations. After making due allowance for the error of taking some of his observations in the vicinity of

iron, it may be safely admitted that, for the most part, the discrepancies which will be found noted in the following pages are to be credited to the irregularities in terrestrial magnetism.

Notwithstanding many and frequently recurring difficulties, Hall evidently lost no opportunities of securing observations for determining position as accurately as possible. The observations which follow have been computed from his journal entries, principally for use in constructing the maps which, with his notes and other data, supplement his surveying work. The computations have not been made with the precision demanded for observations unaffected by such large constant errors; yet the reduced observations furnish data for determining the latitudes of places in the Arctic Zone but little known, and, in some cases, entirely unknown previously to Hall's visits.

ASTRONOMICAL OBSERVATIONS MADE DURING THE YEARS 1864–'69.

[Reduced under the superintendence of Mr. R. W. D. Bryan, late of the Polaris Expedition.]

JULY 29, 1864.—ENTRANCE TO HUDSON'S STRAITS.

h.	m.	s.	°	′	″	
3	51		47	7		⊙.
4	05	30		17	30	Elevation 20 feet.
	10	30		20		
	14			20		
	19			19		
	21			18	30	Lat. 61° 5′.9 N.
4	3		119	30		⊙ to right to Cape Resolution.
	16	30	118	15		
	20		117	50		
	23		117	20		
6	17		42	21		⊙.
	18	30		15		Vessel on course WNW. true, 3 knots per hour.
	20	20		5		
	24	45	41	45		
	25	35		40		
	26	30		35		Chron. slow 4h 57m.
	31	30		10		
	32	40		5		Lat. 61° 8′ N.
	33	40		0		Long. 64° 7′ W.
6	22	10	100	30		⊙ to right to Cape Resolution.
	23	10		20		
	27	40	99	50		
	28	50		40		
	29	40		30		

JULY 31, 1864.—HUDSON'S STRAITS.

h.	m.	s.	°	′	″	
4	17		92	37		2 ⊙.
	20			38		Artificial horizon. Large sextant.
	25	30		39		
	31			40		Chron. slow on ship's chron. 5h 21m; ship's chron. fast on G. M. T. 2s.6.
	37			38		
	41	30		32	30	
	43			30		

JULY 31, 1864.—HUDSON'S STRAITS—Continued.

h.	m.	s.	°	′	″	
4	23	30	92	35		2 ⊙.
	28			37		Small sextant.
	34			37		
	40			34		Lat. 61° 32′.9 N.
7	43	3	69	15		2 ⊙.
	47	35	68	20		At 9h chron. slow on ship's chron. 5h 25m.
	48	50	68	5		
	49	5	67	50		
	59	50	65	45		
8	0	45		30		
	1	50		15		
	5	27	64	30		
	6	37		15		
	7	45		0		Long. 66° 51′.7 W.

AUGUST 3, 1864.—HUDSON'S STRAITS.

h.	m.	s.	°	′	″	
4	21		45	37		⊙.
	29			38	30	14 feet elevation.
	31			37		
	33	30		35	30	
	37			35		Lat. 61° 31′.3 N.
8	42	16	28	3		⊙.
	42	39	27	56		12 feet elevation.
						Chron. slow on G. M. T. 1m 31s.
						Long. 67° 6′.9 W.

AUGUST 5, 1864.—HUDSON'S STRAITS.

h.	m.	s.	°	′	″	
4	25		44	54		⊙.
	28	30		55		20 feet elevation.
	30			55		
	37			53		Lat. 61° 42′.6 N.

Astronomical observations made during the years 1864–'69—Continued.

AUGUST 5, 1864.—HUDSON'S STRAITS—Continued.

h.	m.	s.	°	′	″	
7	7	20	36	55		⊙.
	9	20		42		14 feet elevation.
	10	25		39		
8	16	12	29	54		Chron. slow on G. M. T. $6^m\ 1^s.6$.
	17	50		44		
	19	10		34		
	20	20		26		
	21	20		20		Long. 67° 13′ W.

AUGUST 6, 1864.—HUDSON'S STRAITS.

h.	m.	s.	°	′	″	
3	7	10	42	16		⊙.
3	10	30		21		20 feet elevation.
						Long. 67° 59′.3 W.
4	26		44	36		Chron. slow on G. M. T. $6^m\ 9^s$.
	31			36		Lat. 61° 45′ N.
						Ship on course NW. by W. 3 knots per hour.
						3-45 changed course to NE.

AUGUST 8, 1864.—HUDSON'S STRAITS.

h.	m.	s.	°	′	″	
2	37	30	38	57		⊙.
						20 feet elevation.
4	14	30	43	20		Chron. slow on G. M. T. $6^m\ 35^s$.
	24	7		27		Ship's course N. 10 W., true.
5	7			25		3 knots per hour.
	12			8		Lat. 62° 14′.3 N.
	15			5		Long. 69° 46′.9 W.
2	37	30	93	47		⊙ to left to iceberg. Iceberg to left to North Bluff 64° 34′. North Bluff by C. N. 40′ E. Var. 57°.9 W.

AUGUST 9, 1864.—HUDSON'S STRAITS.

h.	m.	s.	°	′	″	
4	7	30	42	17		⊙.
	11	20		23		20 feet elevation.
						Chapel, observer.
	9	10		21		Hall, observer.
	15			29		
	25	40		39		
	33			45		
	39			46		Lat. 62° 43′.8 N.

AUGUST 11, 1864.—HUDSON'S STRAITS.

h.	m.	s.	°	′	″	
2	43	25	33	58		⊙.
	44	35	36	4		18 feet elevation.
	46			10		
	51	10		32		Ships steering NW. by N.
	52	30		38		
	53	30		43		

AUGUST 11, 1864.—HUDSON'S STRAITS—Continued.

h.	m.	s.	°	′	″	
4	49	45	41	43		⊙.
	57	40		46		20 feet elevation. Small sextant.
5	4	10		47		
	6			48		
	12			47		
4	54	20	41	49		⊙.
5	0	20		50		Large sextant.
	10	10		50		
	14			49		Lat. 63° 6′.9 N.
7	31	25	35	30		⊙.
	32	25		25		
	33	23		20		
	40	27	34	45		
	41	30		40		
	42	35		35		
	43	30		30		

AUGUST 14, 1864.—HUDSON'S STRAITS.

h.	m.	s.	°	′	″	
5	35		43			⊙.
	36	45	43			17 feet elevation.
	38		42	58	45	Lat. 60° 58′.2 N.

AUGUST 15, 1864.—HUDSON'S STRAITS.

h.	m.	s.	°	′	″	
5	34		42	7		⊙.
	37			7	30	20 feet elevation.
						Lat. 61° 32′.3 N.

AUGUST 16, 1864.—HUDSON'S STRAITS.

h.	m.	s.	°	′	″	
5	33		40	59		⊙.
	35		41			20 feet elevation.
	37			3		
	43			6		
	46			6	30	
	48	30		6		Lat. 62° 14′.1 N.

AUGUST 17, 1864.—HUDSON'S BAY.

h.	m.	s.	°	′	″	
6	29		40	23		⊙.
						12 feet elevation.
8	53	25	30	55		Chron. slow on G. M. T. $8^m\ 36^s$.
	55	30	30	43		Lat. 62° 3′.1 N.
						Long. 88° 19′ W.

AUGUST 18, 1864.—HUDSON'S BAY.

h.	m.	s.	°	′	″	
4	18	30	37	32		⊙.
	29	20	38	18		20 feet elevation.
	33	20		30		Chron. slow on G. M. T. $8^m\ 45^s$.
	34	35		35		Long. 89° 59′ W.

Astronomical observations made during the years 1864–'69—Continued.

AUGUST 18, 1864.—HUDSON'S BAY—Continued.

h.	m.	s.	°	′	″	
5	47		40	30		⊙.
	54	30		33		
	56	40		32		
	58	25		31		
6	3			30		
	4	30		30		
	5	30		29		
	6	15		28		Lat. 62° 8′.8 N.

AUGUST 21, 1864.—DEPOT ISLAND.

h.	m.	s.	°	′	″	
5	44		75	38		2 ⊙.
	50			38	30	Small sextant; on 31′, off 32′.
	54	30		42	30	
6				41		
	6			35		
	10			32		
	13			28		
5	53		75	42		2 ⊙.
	57			42	30	Large sextant; on 32′, off 30′ 30″.
6	3	30		38		
	8	30		34	30	
	12			30		Lat. 63° 46′.9 N.
8	40	25	60	15		2 ⊙.
	42			[illegible]		
	43	25	59	45		
	48	24	58	54		
	49	45		40		Chron. slow on G. M. T. 9ᵐ 16ˢ.
	50	50		29		
	59	40	56	55		
9	1	30		35		
	2	45		23		Long. 89° 45′ N.
10	6	50	43	45		N. 67° W. by C.
	10	20	43			N. 66° 30′ W. by C.
						Var. 41°.5 W.

AUGUST 25, 1864.—DEPOT ISLAND.

h.	m.	s.	°	′	″	
5	53		72	56		2 ⊙.
	58	30		57		
6	0	45		55	30	
	5			51		
	9			46	30	
	11	50		42	30	Lat. 63° 47′.5 N.
9	6	20	52	49		Chron. slow on G. M. T.:
	8	22		27		"Helen F." 10ᵐ 38ˢ.5
	9	45		12		Monticello ..... 11 40 .2
	38	5	46	45		Hall's ..... 10 10 .9
						Mean ..... 10 49 .9
						Long. 89° 58′.
	40	45		13		N. 82° W. by C.
	43	20	45	41		N. 81° W.
						Var. 33°.9 W.

AUGUST 26, 1864.—DEPOT ISLAND.

h.	m.	s.	°	′	″	
3	13	25	58	55		2 ⊙.
	14	5	59	1		
	14	23	59	6		

AUGUST 26, 1864.—DEPOT ISLAND—Continued.

h.	m.	s.	°	′	″	
3	25		61	40		⊙ and ☽.
	26	30	61	39		
3	38	5	81	11		2 ☽.
	47	35	79	44		
3	41		63			2 ☉.
	45	55	63	38		
3	42	20	61	33	30	⊙ and ☽.
	43	19		33		
	44	55		31	30	Long. 89° 19′.8 W.

AUGUST 27, 1864.—DEPOT ISLAND.

h.	m.	s.	°	′	″	
8	39		28			⊙.
						7 feet elevation.

AUGUST 30, 1864.—ROWE'S WELCOME.

h.	m.	s.	°	′	″	
3	10	26	27	32		⊙.
	14	15		49		7 feet elevation.
	16	45	28			Vessel's course N., 2½ knots per hour.
	39	53	29	40		
	42	10		51		Chron. slow on G. M. T. 45ˢ.
	43	20		54		
4	14		31	45		
	16	18		49		
	18			54		Long. 87° 57′.5 W.
5	35	15	34	11		⊙.
	41	30		14		
	51			14	30	
	53			13	30	
	58	30		12		
6	5	20		9	30	Lat. 64° 18′.1 N.

AUGUST 31, 1864.—FIRST ENCAMPMENT.

h.	m.	s.	°	′	″	
5	36	30	33	31		⊙.
	39			33		4 feet elevation.
	44	13		35		I. C. +45″.
	47			34		Chron. slow on G. M. T. 56ˢ.5.
	49	30		33		
	57	30		32	30	
	59			31	30	Lat. 64° 34′.9 N.

SEPTEMBER 1, 1864.—FIRST ENCAMPMENT.

h.	m.	s.	°	′	″	
3	47	15	58	34		2 ⊙.
	50			51		I. C. + 1′ 30″.
	51	28	59	4		Chron. slow on G. M. T. 1ᵐ 3ˢ.5.
	53	5		16		

Astronomical observations made during the years 1864–'69—Continued.

SEPTEMBER 1, 1864.—FIRST ENCAMPMENT—Continued.

h.	m.	s.	°	′	″	
5	42	30	66	18		2 ☉.
	46	45		19	30	
	51	33		18	30	
	54	20		18	30	
6	4			14		
	8	40		5		Lat. 64° 36′.3 N.
4	1		46	30		2 ☉.
	2	57		20		I. C. + 1′ 30″.
	3	56		10		Chr. slow on G. M. T. 5ʰ 8ᵐ 19ˢ.
	4	57		0		
	6	40	45	30		
	7	37		20		
	8	35		10		
	9	36		0		
	12	48	44	22		
	15	18	43	56		
	17	53		26		Long. 87° 32′ W.

SEPTEMBER 3, 1864.—SECOND ENCAMPMENT.

h.	m.	s.	°	′	″	
4	55	55	34	12		2 ☉.
	57	25	33	53		Chr. slow on G. M. T. 5ʰ 8ᵐ 35ˢ.
	58	35		38		
5	6	27	32	5	40	☉ N. 61° W. by C.
						Long. 87° 13′.5 W.
						Var. 47°.2 W.

SEPTEMBER 4, 1864.—SECOND ENCAMPMENT.

h.	m.	s.	☐	′	″	
4	16	17	41	3		2 ☉.
	18	9		44		2 ☉.
	20	2	40	18		2 ☉.
	21	20	41	8		2 ☉.
						Chr. slow on G. M. T. 5ʰ 8ᵐ 43ˢ.
						Long. 87° 13′.5 W.

SEPTEMBER 5, 1864.—SECOND ENCAMPMENT.

h.	m.	s.	°	′	″	
3	49	5	45	3		2 ☉.
						I. C. + 1′ 30″.
						Long. 87° 16′.2 W.

SEPTEMBER 6, 1864.—SECOND ENCAMPMENT.

h.	m.	s.	°	′	″	
0	31	45	62	9	30	2 ☉.
	36	47		10		
	41	20		10		
	48			8	30	
	56	45	61	58		
	44	48	62	17		2 ☉.
	50	47		03		I. C. − 3′ 30″.
						Lat. 64° 50′ N.

SEPTEMBER 8, 1864.—SECOND ENCAMPMENT.

h.	m.	s.	°	′	″	
2	43	58	52	22		2 ☉.
	45	27		12		I. C. + 1′ 30″.
	48	30	51	46	30	Chron. slow on G. M. T. 5ʰ 9ᵐ 15ˢ.
	52	30	51	46	30	2 ☉.
	56	40	51	46	30	2 ☉.
						Long. 87° 17′.5 W.

SEPTEMBER 9, 1864.—THIRD ENCAMPMENT.

h	m.	s.	°	′	″	
			60	2	30	2 ☉.
						I. C. + 1′ 30″.
						Lat. 64° 46′ N.
3	32		44	49		2 ☉. N. 88° W. by C.
	35			20		2 ☉.
	36	27	45	9		2 ☉.
	38		44	55		2 ☉. N. 87° W. by C.
						Long. 87° 14′.5 W.
						Var. 43°.2 W.

SEPTEMBER 10, 1864.—THIRD ENCAMPMENT.

h.	m.	s.	°	′	″	
9	58	34	47			2 ☉.
10	0	22		15		I. C. − 22″.5.
	2	08		30		Chr. slow on G. M. T. 5ʰ 9ᵐ 29ˢ.
10	9	18	48	31		2 ☉.
0	37	24	59	17		2 ☉.
	41	2		16		
	44	7		15		
0	36	19	59	18		2 ☉.
	40	29		17		I. C. − 22″.5.
	43	34		16		Lat. 64° 46′.6 N.
3	29	5	44	30		2 ☉.
	29	35		25		I. C. − 22″.5.
	30	13		20		Chr. slow on G. M. T. 5ʰ 9ᵐ 31ˢ.
3	33		43	52		2 ☉. N. 88°.5 W. by C.
	34	37		35		2 ☉. N. 88° W. by C.
	36	37		17		2 ☉. N. 87°.5 W. by C.
						Long. 87° 13′.7 W.
						Var. 42°.9 W.

SEPTEMBER 14, 1864.—THIRD ENCAMPMENT.

h.	m.	s.	°	′	″	
0	37		56	14	45	2 ☉.
	39	25		14		I. C. − 53″.
	42	15		12	15	
	44	25		11	45	
	45	43		11	30	Lat. 64° 46′.4 N.

Astronomical observations made during the years 1864–'69—Continued.

SEPTEMBER 17, 1864.—THIRD ENCAMPMENT.

h.	m.	s.	°	′	″	
2	38		46			2 ☉.
	39	50	45	45		Chr. slow on G. M. T. $5^h\ 10^m\ 27^s$.
	41	50	45	30		
						Long. 87° 13′.9 W.

SEPTEMBER 20, 1864.—FOURTH ENCAMPMENT.

h.	m.	s.	°	′	″	
3	46	27	33	30		2 ☉.
						Long. assumed 87° 16′.9 W.
						Chron. fast on L. M. T. $37^m\ 52^s$.

SEPTEMBER 28, 1864.—FOURTH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	26	43	43	37	30	2 ☉.
	28	11		43		I. C. − 1′.
	29	53		49	15	Chron. fast on L. M. T. $36^m\ 9^s$.

SEPTEMBER 29, 1864.—FOURTH ENCAMPMENT.

h.	m.	s.	°	′	″	
0	22	10	44	35	15	2 ☉.
	25	50		35	30	I. C. − 15″.
	28	42		35	30	
	31	15		35	30	
	34			33	45	
	37			32	15	
	39	37		29	45	Lat. 64° 46′.3 N.
2	38	57	35	59	45	2 ☉. S. 81° W. by C.
	48	12	34	49	15	S. 83° W. by C.
	52	10		18		S. 84° W. by C.
						Var. 40°.4 W.

OCTOBER 1, 1864.—FOURTH ENCAMPMENT.

h.	m.	s.	°	′	″	
10	37	32	37	30		2 ☉.
	40			45		
	42	37	38			
	44	48	38	8		2 ☉.
	46	38		18		Sextant out of order.
	48	5		26	30	
			43	1	30	2 ☉.
						Lat. 64° 46′.6 N.
2	35	45	34	45		2 ☉.
	37	43		30		
	39	52		15		

OCTOBER 3, 1864.—FOURTH ENCAMPMENT.

h.	m.	s.	°	′	″	
2	59	50	30			2 ☉.
3	1	38	29	45		
	3	23		30		
	6	55		0		
	10	24	28	30		S. 89° W. by C.
	12	5		15		
	13	48		0		S. 90° W. by C.
	17	10	27	30		N. 89° W. by C.
						Chron. fast on L. M. T. $35^m\ 7^s$.
						Var. 40°.1 W.

OCTOBER 8, 1864.—FOURTH ENCAMPMENT.

h.	m.	s.	°	′	″	
2	30	23	29	45		2 ☉.
	31	50		35		Chron. fast on L. M. T. $3^h\ 4^m\ 17^s$.
	32	35		30		
	33	12		25		
	33	54		20		

OCTOBER 9, 1864.—FIFTH ENCAMPMENT.

h.	m.	s.	°	′	″	
0	28	10	36	51	30	2 ☉.
	32	50		48	45	Lat. 64° 46′.7 N.

OCTOBER 16, 1864.—FIFTH ENCAMPMENT.

h.	m.	s.	°	′	″	
2	28	55	23	45		2 ☉. S. 78° W. by C.
	30	55		30		
	33			15		S. 79° W. by C.
						Chron. fast on L. M. T. $32^m\ 48^s$.
						Var. 44°.9 W.

OCTOBER 17, 1864.—FIFTH ENCAMPMENT.

h.	m.	s.	°	′	″	
0	19	15	30	57		2 ☉.
	24			56	30	
	28	45		54		Lat. 64° 46′ N.
3	12	48	17	12	30	Chron. fast on L. M. T. $32^m\ 28^s$.

OCTOBER 18, 1864.—FIFTH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	46	11	58			2 ☽.
3	51	21	87	52	30	Chron. fast on L. M. T. $32^m\ 11^s$;
	59	1		55		then long. 83° 5′.5 W. (not
4	4	1		55		reliable).

Astronomical observations made during the years 1864–'69—Continued.

OCTOBER 27, 1864.—FIFTH ENCAMPMENT.

h.	m.	s.	°	′	″	
7	37		0			S. 15° E. by C. Chron. shows L. M. T. Sun about 6′ high, to allow for elevation of place of observation. Var. 43°.2 W.

NOVEMBER 3, 1864.—FIFTH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	43		19	31		2 ☉.
	48			30		

DECEMBER 25, 1864.—SIXTH ENCAMPMENT.

h.	m.	s.	°	′	″	
			2			☉. Elevation 30 feet. Lat. 64° 45′.8 N.

APRIL 11, 1865.—SEVENTH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	51	35	67	1	30	2 ☉. On 30′, off 25′. Refraction great.
	55	23		0		
	59		66	52	30	
0	3			45		
	5	10		43		Lat. 64° 43′.2 W. (?)
2	55		47	21		2 ☉. On 39′, off 25′.
	59	30	46	44	30	Chron. slow on L. M. T. $26^m\ 12^s$.
3	1	33		22		

APRIL 16, 1865.—EIGHTH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	25	30	70	15		2 ☉. On 31′ 30″, off 33′.
	30	10		16	30	
	36	10		17		
	41	5		15	30	
	45	10		15		Lat. 64° 55′ N.
2	33	10	53	54		2 ☉. On 32′ off 30′.
	35	4		34		Chron. slow on L. M. T. $27^m\ 6^s$.
	36	35		19		

APRIL 25, 1865.—NINTH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	41		76	3		2 ☉. On 30′, off 33′.
	46	40		8		
	57	5		11	30	
0	6	30		5		Lat. 65° 1′.2 N.
11	51		76	12	45	2 ☉.
0	12	25		5		

APRIL 25, 1865.—NINTH ENCAMPMENT—Continued.

h.	m.	s.	°	′	″	
3	8	10	57	2		2 ☉. On 30′, off 33′. S. 83° W. by C.
	12	25	56	19		S. 84° W. by C.
	16		55	42		S. 85° W. by C. Chron. slow on L. M. T. $4^m\ 37^s$. Var. 26°.4 W.

MAY 3, 1865.—THIRTEENTH ENCAMPMENT.

h.	m.	s.	°	′	″	
10	16	50	75	4		2 ☉. Chron. slow on L. M. T. $2^m\ 5^s$.
	20	40		28		
	29	40	76	20		
	32	15		33	30	
11	29	45	80	1		2 ☉.
	35	45		10		
	44	35		22		
	47	10		22		
	48	50		22		
	54	20		22		
	57	20		22		
0	3	40		20	30	
	6	45		19		
	9	35		15		
	12	10		14		
	14	30		11		
	16			08		Lat. 65° 23′.3 N.
2	49	47	64	32		2 ☉. N. 87° 15′ W. by C.
	52	40		5		N. 86° W. by C.
	57	50	64	14		N. 84° 30′ W. by C. Var. 40°.9 W.

MAY 5, 1865.—THIRTEENTH ENCAMPMENT.

h.	m.	s.	°	′	″	
8	40					☉ diameter above sea horizon. N. 1° E. by C.

MAY 6, 1865.—THIRTEENTH ENCAMPMENT.

h.	m.	s.	°	′	″	
8	44					☉ diameter above sea horizon. N. 3° E. by C.

MAY 7, 1865.—THIRTEENTH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	48	34	82	38	30	2 ☉.
	52	55		39	30	
	56	30		40		
	59	40		40		
0	2	30		38		
	5	05		35	30	
3	5	6	63	50		2 ☉. N. 76½° W. by C.
	8	26		17		N. 75½° W. by C.
	10	48	62	52		N. 75° W. by C.

Astronomical observations made during the years 1864–'69—Continued.

MAY 8, 1865.—THIRTEENTH ENCAMPMENT.

h.	m.	s.	°	′	″	
9	1					☉ on the horizon.

MAY 12, 1865.—THIRTEENTH ENCAMPMENT.

h.	m.	s.	°	′	″	
8	55	25	68	48	30	2 ☉. S. 5½° E. by C.
2	49	18		48		2 ☉. N. 78° 30′ W. by C.
	52	25		48		2 ☉. N. 77° 15′ W. by C.
	55	30		48		2 ☉. N. 76° 15′ W. by C.
						Chron. slow on L. M. T. 4m 8s.5.
						Lat. 65° 2′ N.
						Var. 47°.9 W.

MAY 20, 1865.—THIRTEENTH ENCAMPMENT.

h.	m.	s.	°	′	″	
2	56		70	48		2 ☉. On 32′ 30″, off 30′.
	58	37		21		2 ☉.
3	1	20	69	53		2 ☉.
	4	20		53		2 ☉.
	7	15		53		2 ☉.
	11	12	68	4	30	2 ☉.
	14	14		4	30	2 ☉.
	17	15		4	30	2 ☉.
	19	30	66	35		2 ☉.
	22	22		35		2 ☉.
	25	17		35		2 ☉.
						Chron. slow on L. M. T. 5m 42s.8.

MAY 21, 1865.—THIRTEENTH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	37	30	89	15		2 ☉. On 33′, off 31′.
	41	30		17		
	45	30		17	30	
	48			18		
	51			18	30	
	53	30		20		
	55	30		18		
	57			17	30	
	58	40		17		
0	0	30		16		
	2	10		15		Lat. 65° 23′.5 N.

MAY 25, 1865.—THIRTEENTH ENCAMPMENT.

h.	m.	s.	°	′	″	
5	35	30	40	47	30	2 ☉. On 32′.5, off 30′.
	38			47		2 ☉.
	40	30		47		2 ☉.
5	49		38			2 ☉. On 32′, off 31′.
	50	15	37	45		
	51	22		30		
	52	40		15		
	53	55		0		Chron. slow on L. M. T. 6m 34s.

MAY 26, 1865.—FOURTEENTH ENCAMPMENT.

h.	m.	s.	°	′	″	
4	57		48	51	30	2 ☉.
						I. C. − 30″.
						Chron. slow on L. M. T. 7m 38s.

MAY 27, 1865.—FOURTEENTH ENCAMPMENT.

h.	m.	s.	°	′	″	
4	23	48	56			2 ☉. On 32′, off 31¼′.
	26	20	55	30		N. 59° W. by C.
	31	5	54	30		N. 58°.5 W. by C.
						N. 57°.5 W. by C.
						Var. 41°.1 W.

MAY 28, 1865.—FOURTEENTH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	48		91	53		2 ☉. On 31′ 30″, off 31′.
	54	20		52		
	59			50		
0	3	15		45		
11	51		91	50		2 ☉. On 33′, off 30′.
	55	30		49	30	
0				48	30	
	4	30		45		Lat. 65° 23′ N.
3	2	53	72			2 ☉. On 31′ 30″, off 31′.
	4	18	71	45		The compass often varies 1°, 2°, and sometimes 6° or 8° in a few minutes, although located in one spot and untouched.
	5	40		30		
	11	10	70	30		
	12	32		15		
	13	58		0		
	30	30	66	53		N. 55° W. by C.
						Chron. slow on L. M. T. 7m 52s.
						Var. 58°.3 W.

MAY 30, 1865.—FOURTEENTH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	38	40	92	25		2 ☉. On 34′, off 30′.
	43			28		
	48	30		29	30	
	51			29	30	
	53					
	56			26	30	
	58	40		25	30	Lat. 65° 22′.7 N.

MAY 31, 1865.—FIFTEENTH ENCAMPMENT.

h.	m.	s.	°	′	″	
4	1		61	30		2 ☉.
	2	10		15		Chron. slow on L. M. T. 9m 22s.
	3	25		0		
	4	37	60	45		
	5	57		30		
	7	13		15		
	8	26		0		

JUNE 1, 1865.—FIFTEENTH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	42	25	93	6	30	2 ☉. On 34′, off 30′.
	47	50		10		
	49	20		10		
	52			9		
	53	40		8		
	55	30		6	30	Lat. 65° 19′.3 N.

Astronomical observations made during the years 1864–'69—Continued.

JUNE 1, 1865.—FIFTEENTH ENCAMPMENT—Continued.

h.	m.	s.	°	′	″	
3	15	42	70	30		2 ☉. On 31′ 30″, off 30′ 30″.
	17			15		Chron. slow on L. M. T. $10^m\ 1^s$.
	18	23		0		
	26	17	68	30		
	27	37		15		
	28	56		0		
	34		67	0		
	35	20	66	45		
	36	47		30		

JUNE 5, 1865.—SIXTEENTH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	37	35	94	12		2 ☉. On 33′ 30″, off 30′.
	41	30		11		
	47	50		10		
	49	10		9		
	52			7		
	55	05		5		Lat. 65° 16′.2 N.
11	44		94	6		2 ☉.
	47			6		
4	55	10	50	26		2 ☉. On 33′, off 30′.
	56	20		12		Chron. slow on L. M. T. $15^m\ 17^s$.
	57	23	49	58		
5	0	27	49	15		2 ☉. On 31′ 30″, off 31′.
	1	40		0		
	4	25	48	26		

JUNE 6, 1865.—SEVENTEENTH ENCAMPMENT.

h.	m.	s.	°	′	″	
9	14	17	82			2 ☉. On 34′, off 30′.
	15	56		15		Long. assumed $5^h\ 48^m$.
	17	43		30		Chron. slow on L. M. T. $17^m\ 30^s$.
11	59	15	94	1		2 ☉. On 34′, off 30′.
0	2	30	93	57		
	3	55		56		
	5	10		53		Lat. 65° 22′.8 N.

JUNE 7, 1865.—BETWEEN SEVENTEENTH AND EIGHTEENTH ENCAMPMENTS.

h.	m.	s.	°	′	″	
9	55		43	58	30	☉.
	57		44	5		Elevation 5 feet.
	58	20		9	15	I. C. − 7″.5.
11	34		47	7	30	☉.
	38			8	30	Elevation 5 feet.
	45			7	30	I. C. − 7″.5.
	50			7		Made on land, which was
	52	30		5		reached at $10^h\ 55^m$.

JUNE 10, 1865.—BETWEEN NINETEENTH AND TWENTIETH ENCAMPMENTS.

h.	m.	s.	°	′	″	
11	34		47	3		☉.
	37	30		3	30	Elevation 5 feet.
	41	40		2		I. C. − 3′.
	45			1		Near a small island, from 1½ to 2 miles from mainland.
11	36	10	47			☉.
	40		47			Elevation 5 feet.
						Lat. 65° 50′.5 N.

JUNE 13, 1865.—BETWEEN TWENTIETH AND TWENTY-FIRST ENCAMPMENTS.

h.	m.	s.	°	′	″	
11	32		46	50	30	☉.
	35			49	15	Elevation 5 feet.
	36	30		49		
	39			48	55	
	41			48	30	
	43	50		46	30	Lat. 66° 11′.7 N.

JUNE 14, 1865.—TWENTY-FIRST ENCAMPMENT.

h.	m.	s.	°	′	″	
11	24		93	38	30?	2 ☉. On 33′ 30″, off 30′.
	26	26		36		Small sextant.
	29			37		
	30	23		38		
	31	30		39		
	33	30		39		Sextant out of order.
	35	10		37		
	37	12		36		
	38	30		35	30	
	41	15		36	?	
	42	30		33		
	44	30		31		
	45	45		30		Lat. 66° 14′.7 N.
4	46	50	50	45		2 ☉.
	48	8		30		Large sextant.
	49	23		15		
	50	26	50	5		2 ☉. On 34′, off 30′. Small sext't.
	53	10		5		2 ☉.
	55	50		5		2 ☉.
						Chron. slow on L. M. T. $29^m\ 25^s$.

JUNE 21, 1865.—HURD'S CHANNEL.

h.	m.	s.	°	′	″	
9	58	40	89	46		2 ☉. On 34′, off 30′.
10	1	45	90	2		
	3	40		12		
	12			58		
	13	30	91	5		
	15	15		12	30	
11	39		94	1	30	2 ☉.
	41	25	93	57		
	43	50		56		
	46	15		52		
	50			45		
	51	50		43		Lat. 66° 10′ N.

Astronomical observations made during the years 1864–'69—Continued.

JUNE 25, 1865.—TWENTY-FIRST ENCAMPMENT.

h.	m.	s.	°	′	″	
2	46	20	70			2 ☉. On 32′, off 30′ 30″.
	47	42	69	45		N. 69° W. by C.
	49	8			30	
	50	22			15	N. 68° W. by C.
	57	2	68			N. 66° W. by C.
	58	27	67	45		
3	1	5			15	
	2	25			0	N. 65° W. by C.
						Chr. slow on L. M. T. $54^m\ 50^s.5$.
						Var. 44°.5 W.

JUNE 29, 1865.—TWENTY-FIRST ENCAMPMENT.

h.	m.	s.	°	′	″	
11	1	25	93	28		2 ☉. On 34′, off 29′.
	4	40		28		Observation indifferent; sextant out of order.
	6	30		28	30	
	8			30		
	9	30		27		
	11			25		
	12	30		26		
	13	30		26		
	15			25		
	18			23	30	Lat. 66° 15′.5 N.
2	41	20	70	21		2 ☉. On 34′ 30″, off 29′.
	42	57		0		Chron. slow on L. M. T. $57^m\ 28^s$.
	44	7	69	47		
	50	32	68	35	30	
	52	15		16		
	53	20		5		

JULY 3, 1865.—TWENTY-SECOND ENCAMPMENT.

h.	m.	s.	°	′	″	
11			92	45		2 ☉. On 34′ 30″, off 28′.
	2	40		46		A different chronometer from that previously used.
	5			46	30	
	8	15		47	30	
	11	10		47	30	
	13	30		47	30	
	15	30		46	30	
	18			45		Lat. 66° 19′ N.
2	45	45	69	30		2 ☉. On 34′ 30″, off 28′.
	48	30	69	30		2 ☉.
	51	22	69	30		2 ☉.
						Chron. slow on L. M. T. $54^m\ 51^s$.
						These time observations made $\frac{1}{8}$ of a mile S. 75° E. from where noon observations were made.

JULY 13, 1865.—TWENTY-SECOND ENCAMPMENT.

h.	m.	s.	°	′	″	
11	57	30	90	24		2 ☉. On 33′, off 30′.
0	0	20		24	30	
	4	30		25		
	7	23		25		
	10			24	30	
	10	50		24		
	11	43		24		
	12	35		23	30	
	14			22		Lat. 66° 19′.6 N.

JULY 13, 1865.—TWENTY-SECOND ENCAMPMENT—Cont'd.

h.	m.	s.	°	″	′	
11	52	30	90	21	30	2 ☉. On 32′.30, off 30′ 30″.
	59	10		23	45	
0	2	45		26		
	6	30		25		
	8	50		24		
3	23	12	70	30		2 ☉. On 32′.30, off 30′.
	24	40		15		Chron. slow on L. M. T. $1^m\ 14^s$.
	26	10		0		

JULY 18, 1865.—TWENTY-SECOND ENCAMPMENT.

h.	m.	s.	°	′	″	
10	34	30	73	43		2 ☽. On 32′ 30″, off 30′ 30″.
	36	40		28		
	38	50		11		
10	42	25	85	7		2 ☉.
	43	55		15		
	44	47		19		
10	48		50	53	30	Nearest limbs ☉ and ☽.
	50	50		52		
	53	50		51	15	
	56			49	15	
	57	40		49		Long. 85° 29′ W.
11			70	16		2 ☽.
	2	20		3		
	4		69	49	45	
11	7	35	87	1	45	2 ☉.
	9	5		6	30	
	10	10		10	30	
11	13	30	50	42		Nearest limbs ☉ and ☽.
	16	50		40		
	19	25		39	45	
	22	15		37	15	
	24			36	15	
11	30		50	33	30	Nearest limbs ☉ and ☽.
	35	20		31	15	
	40	25		29	30	
			88	46		2 ☉ meridian altitude. Lat. 66° 19′.9 N.
3	37	52	66	15		2 ☉.
	39	15		0		
	40	38	65	45		
	42			30		
	43	23		15		

JULY 23, 1865.—TWENTY-SECOND ENCAMPMENT.

h.	m.	s.	°	′	″	
3	50	47	62			2 ☉. On 32′ 30″, off 30′ 30″.
	52	10	61	45		Chron. slow on L. M. T. $3^m\ 10^s$.
	53	28	61	30		

Astronomical observations made during the years 1864–'69—Continued.

JULY 28, 1865.—TWENTY-SECOND ENCAMPMENT.

h.	m.	s.	°	′	″	
3	20		65	15		2 ☉. On 32′ 30″, off 30′ 30″. Chron. slow on L. M. T. 4ᵐ 21ˢ.
	21	27		0		
	22	55	64	45		
3	28	45	69	6		Nearest limbs ☉ and ☽.
	32	8		7	30	
	34	55		8	15	
3	39	48	61	45		2 ☉.
	41	25		30		
	42	34		15		
3	45	53	69	13	30	Nearest limbs ☉ and ☽.
	48	40		13	45	
	51	35		14	45	
3	54	51	59			2 ☉.
	57	30	58	30		
	58	54		15		
4	0	10		0		
4	51	40	69	36	45	Nearest limbs ☉ and ☽.
	56	36		39		
5	1	40		40	45	
5	6	45	69	42	30	Nearest limbs ☉ and ☽.
	9	15		43	45	
	11	35		44	15	
5	14	5	69	45		Nearest limbs ☉ and ☽.
	17			46	15	
	19	55		46	45	

AUGUST 2, 1865.—TWENTY-SECOND ENCAMPMENT.

h.	m.	s.	°	′	″	
3	8		64	45		2 ☉. On 32′ 30″, off 30′ 30″. Chron. slow on L. M. T. 5ᵐ 28ˢ.
	9	30		30		
	11			15		
	12	30		0		
	14		63	45		
3	18	30	63			2 ☉. On 32′ 30″, off 31′ 30″. Chron. slow on L. M. T. 5ᵐ 12ˢ. Bad sextant.
	20		62	45		
	21	30		30		
	23			15		
	24	30		0		

AUGUST 3, 1865.—TWENTY-SECOND ENCAMPMENT.

h.	m.	s.	°	′	″	
3	12	17	63	30		2 ☉. On 32′ 30″, off 30′ 30″. Chron. slow on L. M. T. 5ᵐ 42ˢ.
	13	40		15		
	15	12		0		
	19	35	62	15		
	21	5		0		
	22	33	61	45		
	26	55		0		
	28	32	61	45		2 ☉.

AUGUST 5, 1865.—TWENTY-SECOND ENCAMPMENT.

h.	m.	s.	°	′	″	
9	16	30	68	15		2 ☉. Ind. cor. 1′.
	20		68	15		2 ☉.
	23	30	68	15		2 ☉. Chron. slow on L. M. T. 5ᵐ 50ˢ.
11	51	35	80	39	(?)	2 ☉.
	56	30		37		No ind. cor. given. U. S. C. S. sextant very much out of order; had index cor. of 3.0″ on Aug. 2.
0	0	10		37		Lat. 66° 18′.3. N.

AUGUST 8, 1865.—TWENTY-THIRD ENCAMPMENT.

h.	m.	s.	°	′	″	
11	42	30	39	12	30	☉.
	46	30		14	45	Sea horizon. Eye, 5½ feet.
	50			15	45	
	53	35		16		
	57	35		16	30	Long. 5ʰ 43ᵐ 20ˢ W. by D. R.
0	2	35		17	15	
	5	50		16	45	
	10	43		15		
	14	40		14		
	17	30		13		
	20	8		11		Lat. 66° 31′.3 N.

AUGUST 15, 1865.—TWENTY-THIRD ENCAMPMENT.

h.	m.	s.	°	′	″	
3	59	10	24	6		☉.
4	1	20	23	53		Sea horizon.
	3	8		44		Dip—2′. Chron. slow on L. M. T. 6ᵐ 7ˢ.

AUGUST 20, 1865.—TWENTY-THIRD ENCAMPMENT.

h.	m.	s.	°	′	″	
3	38	45	24	10		☉.
	39	55		5		Sea horizon.
	40	45		0		Height of eye, 9 feet.
	41	47	23	55		Chron. slow on L. M. T. 8ᵐ 10ˢ.
	42	40		50		
	44	25		40		
	45	20		35		
3	52	30	23			☉.
	53	30	22	55		Height of eye, 5 feet.
	54	25		50		Chron. slow on L. M. T. 7ᵐ 27ˢ.

AUGUST 24, 1865.—TWENTY-THIRD ENCAMPMENT.

h.	m.	s.	°	′	″	
3	53	10	21	30		☉.
	54	15		25		Horizon 3 miles off.
	55	10		20		Chron. slow on L. M. T. 8ᵐ 14ˢ.
4	4	15	20	30		☉.
	5	55		20		Horizon 3 miles off.
	7			15		Chron. slow on L. M. T. 8ᵐ 9ˢ.

Astronomical observations made during the years 1864–'69—Continued.

AUGUST 25, 1865.—TWENTY-THIRD ENCAMPMENT.

h.	m.	s.	°	′	″	
11	52		33	55		⊙.
	54	53		55	30	Sea horizon.
	57	7		55		Height of eye, 10 feet.
0	0	30		54	30	Lat. 66° 28′.9 N.

AUGUST 27, 1865.—TWENTY-FOURTH ENCAMPMENT.

h.	m.	s.	°	′	″	
0	10	20	33	5	30	⊙.
12	45			3	45	Sea horizon.
						Height of eye, 5 feet.
						Lat 66° 29′.3 N.
3	13	15	24			⊙.
	22	20	23	15		Sea horizon.
						Land behind it, and distant ½ mile.
						Height of eye, 5 feet.
						Chron. slow on L. M. T. 8ᵐ 24ˢ.

AUGUST 28, 1865.—TWENTY-FOURTH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	20		32	51		⊙.
	24	40		50	15	Sea horizon.
						Elevation of eye, 5 feet.
						Chron. having stopped is taken as 47ᵐ 44ˢ slow on L. M. T.
						Lat. 66° 28′.6 N.

OCTOBER 13, 1865.—TWENTY-SIXTH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	52		30	35	30	2 ⊙. On 33′, off 31′.
	56			34	30	
0	1			31	30	Lat. 66° 31′.4 N.

OCTOBER 14, 1865.—TWENTY-SIXTH ENCAMPMENT.

h.	m.	s.	°	′	″	
1	41	7	24	15		2 ⊙. On 32′ 15″, off 31′ 45″.
	43	35		0		Chron. fast on L. M. T. 1ᵐ 53ˢ.
	46	15		23	45	
1	50	17	23	20		2 ⊙. On 32′ 15″. off 31′ 45″.
	52			10		Chron. fast on L. M. T. 2ᵐ 14ˢ.
	55	13	22	50		

FEBRUARY 7, 1866.—TWENTY-EIGHTH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	36	30	16			2 ⊙. On 32′ 30″, off 31′ 30.″
	41	15		5		⊙ S. 61½° W. by C.
	45	40		10		⊙ S. 64° W. by C.
	50	30		13	30	⊙ S. 65° W. by C.
	56	30		16		⊙ S. 65° (?) W. by C.

FEBRUARY 7, 1866.—TWENTY-EIGHTH ENCAMPM'T—Cont'd.

h.	m.	s.	°	′	″	
0	8		16	16	30	⊙ S. 67° W. by C.
	16			13		⊙ S. 71° W. by C.
	21			8	30	⊙ S. 72° W. by C.
	24	50		4	30	⊙ S. 73° W. by C.
	28	50		0		⊙ S. 73½° W. by C.
						Var. 65° W.
						Ther. —35°.
						Lat. 66° 30′.5 N.

MARCH 28, 1866.—TWENTY-NINTH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	32		52	41	30	2 ⊙. On 32′, off 32′.
	39			43	30	Large sextant.
	44			42	30	
	50			40	30	Lat. 66° 30′.2 N.
11	35	45	52	48	30	2 ⊙. On 37′, off 26′.
						⊙ S. 58½° W. by C.
	42			48		⊙ S. 60½° W. by C.
	48	30		46	30	⊙ S. 63° W. by C.
						Lat. 66° 30′.7 N.
2	33	10	39	11		2 ⊙. On 39′, off 26′.
						⊙ N. 70° W. by C.
	37	10	38	36		⊙ N. 69° W. by C.
	41	10		0		⊙ N. 68° W. by C.
						Var. 62°.8 W.
						Chron. slow 26ᵐ 45ˢ.
						Eggert chronometer slow on G. M. T. 1ʰ 10ᵐ 46ˢ.

APRIL 3, 1866.—TWENTY-NINTH ENCAMPMENT.

h.	m.	s.	°	′	″	
2	51	48	40			2 ⊙.
	53	20	39	45		I. C. — 15″.
	54	50		30		Ward's chron. slow on L. M. T 29ᵐ
						Long. assumed 5ʰ 47ᵐ 44ˢ
						W. slow on G. M. T. 6 16 44
						Eggert's chron. fast on W 5 2 35
						E. slow on G. M. T. 1 14 9
						March 28 ..... 1 10 46
						May 24 ..... 1 42 32
						Loss per day 33ˢ.44

APRIL 4, 1866.—THIRTIETH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	27	53	58	1		2 ⊙.
	31	23		2		I. C. — 15″.
	34	10		3		
	39	10		2	30	
	42	15		0	45	Lat. 66° 32′.9 N.
2	47	45	41	15		2 ⊙.
	50	45	40	45		I. C. — 15″.
	52	20		30		Chron. slow on G. M. T. 6ʰ 17ᵐ 5ˢ.
						Long. 86° 56′ W.
	53	55		15		⊙'s true az., N. 126° 3′.5 W.
	55	25		0		⊙'s az. by C., N. 51° 30′ W.
						Var. 74° 33′.5.
						Evidently local attraction.

Astronomical observations made during the years 1864–'69—Continued.

APRIL 6, 1866.—THIRTY-FIRST ENCAMPMENT.

h.	m.	s.	°	′	″	
11	54		59	22		2 ☉. On 36′, off 28′.
	57	20		22	30	
0	1			23		
	5			♌		Lat. 66° 40′ N.

APRIL 7, 1866.—THIRTY-FIRST ENCAMPMENT.

h.	m.	s.	°	′	″	
3	1			45		2 ☉.
	2	38	44	45		I. C. − 30″.
	4	17		30		Chr. slow on G. M. T. 5h 52m 10s.
						Long. 87° 4′.7 W.
						☉'s true az. N. 129° 13′ W.
						☉'s az. by C. 71° W.
						Var. 58° 13′ W.

APRIL 8, 1866.—THIRTY-SECOND ENCAMPMENT.

h.	m.	s.	°	′	″	
11	53		60	40		2 ☉.
	56			41		I. C. − 4′.
	58	30		42		Lat. 66° 44′.9 N.
0	1	30		43		☉ S. 66° W. by C.
	4	12		43		The last six observations not
	8			43	30	good, the horizon-glass be-
	9			43		coming loose.
	10	30		41		Lat. place of obs., 66° 45′ N.
	11	45		40		Diff. of lat. of Enc't, 1′.8.
	14	10		38		Lat. Enc't, 66° 46′.8.
2	44	30	48			2 ☉.
	46	17	47	45		I. C. − 22″.
	48			30		Chr. slow on G. M. T. 5h 52m 33s.
						Long. 87° 16′.7 W.
						☉'s true az. N. 130° 24′ W.
						☉'s az. by C. N. 76° 30′ W.
						Var. 56° 54′ W.

APRIL 10, 1866.—THIRTY-SECOND ENCAMPMENT.

h.	m.	s.	°	′	″	
			62	4		2 ☉.
						Lat. 66° 47′ N.

APRIL 12, 1866.—THIRTY-THIRD ENCAMPMENT.

h.	m.	s.	°	′	″	
11	49	40	63	11	30	2 ☉.
	53	30		12		
	56			12	30	
	58	30		12	30	
0	1			12		
	4			11	30	
	7			10		Lat. 66° 56′.5 N.
3	27	10	43	45		2 ☉.
	28	40		30		Chron. slow on G. M. T. 5h 54m 8s.
	30	10		15		Long. 87° 30′.5 W.

APRIL 12, 1866.—TWENTY-THIRD ENCAMPMENT—Cont'd.

h.	m.	s.	°	′	″	
3	37	35	42			2 ☉.
	39		41	45		Long. 87° 30′ W.
	40	27		30		☉'s true az. N. 119° 16′ 20″ W.
						☉'s az. by C. N. 50° 30′ W.
						Var. 68° 46′.3 W.

APRIL 16, 1866.—THIRTY-FOURTH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	56	30	65	54	30	2 ☉.
	59	30		53		I. C. — 4′.
0	3			51	30	
	6	30		50		
	9	30		49		Lat. 67° 4′.2 N.
3	12	10	48	30		2 ☉.
	13	45		15		I. C. − 15″.
	15	15		0		Chr. slow on G. M. T. 5h 55m 28s.
						Long. 87° 41′.5 W.
						☉ by C. N. 51° W.
						Var. 73° 34′ W.

APRIL 20, 1866.—THIRTY-FIFTH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	43		68	13		2 ☉.
	46	20		16		I. C. − 4′.
	51	50		20		
	57	40		21		
0	2			21		
	5			19		
	8	8		18		
	11	45		15		
	15	20		11	30	Lat. 67° 13′.9 N.
3	12	10	51	15		2 ☉.
	13	45		0		I. C. − 15″.
	15	30	50	45		Chr. slow on G. M. T. 5h 51m 50s.
	20			0		☉ by C. N. 46° W.
	21	35		49	45	Long. 87° 31′ W.
	23	10		30		Var. 76° 38′ W.

APRIL 22, 1866.—THIRTY-SIXTH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	48		69	14	30	2 ☉.
	52	10		16		
	54	50		16	30	
	57	10		17		
	59	10		17		
0	1	45		16		
	4	45		15		
	7	50		14	30	
	10			12		Lat. 67° 24′.5 N.
3	15	20	51	45		2 ☉.
	16	55		30		Chr. slow on G. M. T. 5h 52m 37s.
	18	25		15		Long. 87° 40′.7 W.
	20			0		☉ by C. N. 39° W.
						Var. 84° 20′ W.

Astronomical observations made during the years 1854–'69—Continued.

APRIL 25, 1866.—THIRTY-SEVENTH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	51		70	50		2 ☉. On 30′, off 34′.
	55			50	30	Very cloudy.
	58	30		51		
0	3	40		47	30	
	7	30		48	30	Lat. 67° 36′.4 N.
	12			42		

APRIL 26, 1866.—THIRTY-SEVENTH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	53	20	71	27		2 ☉.
	59	10		27	30	I. C. + 1′ 45″.
0	3			26		Lat. 67° 36′.9 N.
	8			24	30	
	12	20		21		
11	55	40	71	30		2 ☉.
0	2			30		I. C. − 30″.
	6	35		27		Lat. 67° 36′.8 N.
4	17	50	43	15		2 ☉.
	20	35	42	45		I. C. − 30″.
	22			30		Chr. slow on G. M. T. 5ʰ 54ᵐ 10ˢ.
	23	20		15		Long. 87° 7′.7 W.
						☉ by C. N. 27° 45′ W.
						Var. 79° 15′ W.

MAY 4, 1866.—FORTIETH ENCAMPMENT.

h.	m.	s.	°	′	″	
0	48		73	28	15	2 ☉.
	50	20		18		I. C. − 52″.
	51	35		14	15	Lat. 67° 59′.9 N.
4	18	40	44	45		2 ☉.
	20			30		I. C. − 45″.
	21	20		15		Chr. slow on G. M. T. 6ʰ 8ᵐ 25ˢ.
						Long. 88° 18′.7 W.

MAY 15, 1866.—FORTY-SIXTH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	45	10	82	56		2 ☉.
	51	10	83	2		I. C. + 2′.
	54	35		3		Cloudy.
	57			3		
	59	40		3		
0	4			3		
	7	30		2		Lat. 67° 8′.3 N.
	10	45		0		
	14	20	82	56	30	
4	40		49	20		2 ☉.
	42	30	48	50		I. C. + 2′.
	45	30		17		Chr. slow on G. M. T. 5ʰ 49ᵐ 37ˢ.
						☉ by C. N. 29° W.
						Long. 87° 41′.7 W.
						Var. 70° 38′ W.

MAY 16, 1866.—FORTY-SIXTH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	55	8	83	31		2 ☉.
	57	35		31	30	I. C. + 2′.
0				31		Lat. 67° 8′.6 N.
	1	40		30		
	4			29		

MAY 20, 1866.—FORTY-SEVENTH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	49	35	85	30		2 ☉.
	53	17		31		I. C. + 2′.
	58	35		32	30	
0	2			33		
	5	10		33		Lat. 66° 59′.9 N.
	9	15		30	30	

MAY 24, 1866.—FIFTIETH ENCAMPMENT.

h.	m.	s.	°	′	″	
4	15	45	57	16		2 ☉.
	19		56	36	30	Chr. slow on G. M. T. 5ʰ 49ᵐ 15ˢ.
	21	30		11	30	Long. 86° 56′ W.
	24		55	41		☉ by C. N. 41° W.
	26	30		11	30	Var. 62° W.

MAY 30, 1866.—FIFTY-FIRST ENCAMPMENT.

h.	m.	s.	°	′	″	
11	40	20	90			2 ☉.
	46	20		3		I. C. + 2′.
	50	15		5		Lat. 66° 30′.3 N.
	54			6		
	57	45		5	30	
0	3	20		2		
	6	40	89	59		
11	52		91	10		2 ☉.
0	0	20		10	30	I. C. + 2′.

MAY 31, 1866.—FIFTY-FIRST ENCAMPMENT.

h.	m.	s.	°	′	″	
4	20	15	58	57		2 ☉.
	23	10		25		I. C. 25″.
	25	7		2		Chr. slow on G. M. T. 5ʰ 48ᵐ 10ˢ.
	27	13	57	38		Long. 86° 34′.5 W.
	30	25		0		☉ by C. N. 40° W.
						Var. 61° 42′ W.

JUNE 3, 1866.—MOUTH OF GRINNELL RIVER.

h.	m.	s.	°	′	″	
11	43	30	91	14		2 ☉. On 27′, off 36′ 30″.
	48	20		15		
	52	25		18		
	58	30		21		
0	1	40		22		Lat. 60° 22′.8 N.

Astronomical observations made during the years 1864-'69—Continued.

JUNE 3, 1866.—MOUTH OF GRINNELL RIVER—Continued.

h.	m.	s.	°	′	″	
0	4		91	22		
	8	30		20	30	
	11	30		20		
	14	20		17		
	16	50		16		

JUNE 9, 1866.—FIFTY-SECOND ENCAMPMENT.

h.	m.	s.	°	′	″	
3	54	57	68	16		2 ☉.
	57	35	67	46		I. C. + 30″.
	59	13		28		Lat. used 66° 29′ N.
						Chr. slow on G. M. T. $5^h\ 32^m\ 31^s$.
						Long. 86° 21′.7 W.
						Hall thinks long. too great, and ascribes it to Eggert's chron. not keeping its rate.
						☉'s true az. N. 112° 10′ W.
						☉ by C. N. 45° 30′ W.
						Var. 66° 40′ W.
4	6	20	66	9		2 ☉.
	8	14	65	51		I. C. + 30″.
	10	10		24		Chr. slow on G. M. T. $5^h\ 32^m\ 31^s$.
						Long. 86° 22′ 15″ W.

JUNE 10, 1866.—FIFTY-SECOND ENCAMPMENT.

h.	m.	s.	°	′	″	
11	29		91	28		2 ☉. I. C. + 30″.
						☉ S. 51½° W. by C.
	31	35		35	30	☉ S. 52° W. by C.
	34	10		43		☉ S. 52½° W. by C.
	48	43	92	14	30	☉ S. 58° W. by C.
	54	53		24		☉ S. 60° W. by C.
0	1	40		33		☉ S. 61½° W. by C.
	6	40		35		☉ S. 63½° W. by C.
	11	10		36		☉ S. 65° W. by C.
	16	40		36	30	☉ S. 67° W. by C.
	20	47		35		☉ S. 68° W. by C.
	26	17		31	30	☉ S. 69° W. by C.
	32	7		25	30	☉ S. 70½° W. by C.
	36	47		18		☉ S. 73½° W. by C.
						Chron. fast on L. A. T. $14^m\ 5^s$.
						Long. used $5^h\ 44^m\ 4^s$ W.
						Lat. 66° 28′.9 N.
11	45	40	92	12	30	2 ☉. ☉ S. 57° W. by C.
	52	20		24		☉ S. 59° W. by C.
	58			30	30	☉ S. 60° W. by C.
0	4	17		37		☉ S. 62° W. by C.
	9	10		40		☉ S. 64° W. by C.
	14	20		40	30	☉ S. 66° W. by C.
	18	40		40	30	☉ S. 67½° W. by C.
	23	15		37	30	☉ S. 68½° W. by C.
	29	55		31		☉ S. 69½° W. by C.
	35	35		24		☉ S. 71° W. by C.
	54			8		☉ S. 76° W. by C.
						Lat. 66° 27′.3 N.
4	27	15	62	45		2 ☉. ☉ N. 40° W. by C.
	28	30		30		
	29	47		15		☉ N. 39° W. by C.
						Var. 65°.4 W.

JUNE 10, 1866—FIFTY-SECOND ENCAMPMENT—Continued.

h.	m.	s.	°	′	″	
4	34	57	61	15		2 ☉. ☉ N. 37° W. by C.
	36	15		0		☉ N. 36° W. by C.
	37	35	60	45		☉ N. 35° W. by C.
4	43	8	59	38		2 ☉. Small sextant.
	44	40		20		☉ N. 34 W. by C.
	45	38		10		Chron. fast on L. M. T., the mean of 3 observat'ns, $14^m\ 56^s$.

JUNE 13, 1866.—FIFTY-SECOND ENCAMPMENT.

h.	m.	s.	°	′	″	
11	57		93	2	45	2 ☉.
0	3	50		5		Chron. fast on L. A. T. $4^m\ 57^s$.
	8			4		Long. used $5^h\ 44^m\ 4^s$ W.
	14	15		2	30	
	19		92	59		Lat. 66° 26′.7 N.
0	0		93	8		2 ☉.
	10			8		I. C. − 5′.
	13	20		4		Lat. 66° 28′.1 N.
	20		92	57		
4	19	50	62	45		2 ☉.
	21	10		30		Chron. fast on L. M. T. $5^m\ 12^s$.
	22	30		15		
4	23	12	62	11		2 ☉.
	24	10		0		I. C. − 5′.
	25	5	61	48	30	Chron. fast on L. M. T. $5^m\ 10^s$.

JUNE 15, 1866.—FIFTY-THIRD = FIFTY-FIRST ENCAMPMENT.

h.	m.	s.	°	′	″	
11	54	45	93	10		2 ☉. I. C. − 4′ 45″.
						☉ S. 59° W. by C.
	59			12	30	☉ S. 61° W. by C.
0	3	30		14		☉ S. 62° W by C.
	5	55	93	15		☉ S. 62° W. by C.
	8	15		15		☉ S. 63° W. by C.
	10	50		15		
	12	10		14		☉ S. 64° W. by C.
	13	50		13	30	☉ S. 65° W. by C.
	18	30		11	30	☉ S. 67° W. by C.
	20	50		9		
	21	45		7	30	☉ S. 68° W. by C.
						Chron. fast on L. A. T. $7^m\ 13^s$.
						Lat. 66° 29′.8 N.
7	37	20	68	37		2 ☉.
	42	22	67	40		I. C. − 4′ 45″. ☉ N. 50° W. by C.
	43	50		24		
	45			10	30	
7	51		66	40		2 ☉.
	52	3	65	52	30	I. C. − 4′ 45″.
	53	14		38	30	☉ N. 46° W. by C.
						Var. 62°.3 W.

Astronomical observations made during the years 1864–'69—Continued.

June 16, 1866.—Near Beacon Hill.

h.	m.	s.	°	′	″	
3	25	20	93	5		2 ☉.
	38	20		9	30	I. C. – 4′ 45″.
	41			13		Chr. fast on L. A. T. 3ʰ 51ᵐ 42ˢ.
	45			13		Eggert's chron.
	46	50		14	30	
	48	30		16	30	
	50	25		14	30?	
	52			16	30	
	53	30		16	30	Lat. 66° 30′.8 N.
	54	50		16	30	
	56			16		
	58			18		
	59			15		
4				14		
	1	50		14		
	2	45		15		
	3	55		15		
	5	5		14	30	
	7			13	30	
	8	30		9		
	9	50		7		
	11			7½		
	12	10		6		☉. On 36′ 30″, off 27′.
	13			4½		

June 16, 1866.—Top of Beacon Hill.

h.	m.	s.	°	′	″	
3	35	20	73	10		2 ☉.
	36	40	72	58		I. C. – 3′ 30″.
	37	50		44		Ward's chron.
						Eggert 3ʰ 38ᵐ 12ˢ fast on Ward's chron.
3	43	50	71	40		2 ☉.
	45	3		28		I. C. – 3′ 30″.
	46	7		16		
4	35	23	62	3		2 ☉.
	36	32	61	48		I. C. – 3′ 30″.
	37	45		35	30	
4	42	55	60	35		2 ☉.
	44	8		21		I. C. – 3′ 30″.
	45	8		10		
4	54	30	58	19		2 ☉. I. C. – 3′ 30″.
						☉ N. 34° W. by C.
	57	20		19		2 ☽. ☽ N. 33½ W. by C.
	59	53		19		2 ♂. ♂ N. 33° W. by C.
5	3	45	56	30		2 ☉. I. C. – 3′ 30″.
						☉ N. 32½ W. by C.
	6	35		30		2 ☽. ☽ N. 32° W. by C.
	9			30		2 ♂. ♂ N. 31° W. by C.
						Var. 64°.6 W.

June 19, 1866.—Teekeera.

h.	m.	s.	°	′	″	
11	49	20	93	33		2 ☉.
	52	10		35		I. C. 3′ 30″.
	53	40		34		Chron. slow on L. A. T. 1ᵐ 4ˢ.
	55	30		34	30	
	56	45		35		
	58	30		35	30	
0	0	30		35		
	3			35		
	4	15		35		Lat. 66° 25′.4 N.
	6	30		34	30	
	7	40		34		
	10			☌		
	11	10		31		
	12	45		30		
4	45	20	57	3		2 ☉.
	47	20	56	38		I. C. – 3′ 15″.
	48	35		22		
4	53	40	55	21		2 ☉.
	54	33		10		I. C. – 3′ 15″.
	55	35		54	59	
5	4		53	18		2 ☿. I. C. – 3′ 15″.
						☉ N. 24½° W. by C.
	6	40		18		2 ♁. ☉ N. 23½° W. by C.
	9	18		18		2 ☉. ☉ N. 23° W. by C.
						Var. 68°.3 W.
5	17	35	50	35	30	2 ☉.
	18	47		☌		I. C. – 3′ 15″.
	19	42		10		
5	23	50	49	20		2 ☉.
	24	40		10		I. C. – 3′ 15″.
	25	34		48	59	

June 29, 1866.—Fifty-seventh Encampment.

h.	m.	s.	°	′	″	
0	11	15	93	1		2 ☉.
	13		92	59		I. C. + 1′ 30″.
	15			58		Lat. 66° 25′.2 N.
	16	25		56	30	
	19			55		
5	41	45	45	37		2 ☉.
	44	25		5		I. C. + 1′ 30″.
	48		44	21		Chron. fast on L. A. T. 3ˢ.
	49	35		2		

July 2, 1866.—Fifty-seventh Encampment.

h.	m.	s.	°	′	″	
11	54	30	92	40		2 ☉.
	55	35		40	30	I. C. + 1′ 30″.
	57			41	30	
	58	20		40		
	59	30		40	30	

Astronomical observations made during the years 1861–'69—Continued.

JULY 2, 1866.—FIFTY-SEVENTH ENCAMPMENT—Cont'd.

h.	m.	s.	°	′	″	
0	0	30	92	39		
	1	30		40		
	2	15		39	30	
	3	20		41	30	
	4	25		40		
	5	25		38		
	7	20		40		
	8	35		36	30	
	9	45		36	30	
	10	40		35		Lat. 66° 25′.2 N.
11	16	3	47	55		2 ☉.
	17	43		35		I. C. + 1′ 30″.
	18	39		24		
	21	16		24		2 ☉.
	23	56		24		2 ☉.
						Chron. slow on L. A. T. 2ˢ.

JULY 6, 1866.—FIFTY-EIGHTH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	55	45	91	46	30	2 ☉.
	57	47		46	30	I. C. + 2′ 30″.
	59	17		46	30	
0	0	20		48		
	2			46	30	
	3			46		
	4	10		46		Lat. 66° 31′.5 N.

JULY 7, 1866.—FIFTY-NINTH ENCAMPMENT.

h.	m.	s.	°	′	″	
0	7	30	91	35		2 ☉.
	9			33		I. C. + 2′ 30″.
	10			35	30	
	11			35		
	12			33		Lat. 66° 30′.9 N.
	13			33		
	13	50		31		
	15			30		
	16			30		
	18			28		

JULY 9, 1866.—FIFTY-NINTH ENCAMPMENT.

h.	m.	s.	°	′	″	
8	13	20	66	36	30	2 ☉.
	14	50		51		I. C. − 30″.
	16	20	67	9		Chron. slow on L. A. T. 38ˢ.
8	22	10	68	10		2 ☉.
	23	10		20		I. C. − 30″.
	24			31		
11	54	25	91	15	30	2 ☉.
	56	30		15	30	I. C. − 30″.
	59	20		15	30	
0	0	40		15		Lat. 66° 28′.2 N.
	1	50		16		
	3			15		
	4	37		14	30	
	6	25		13		Refraction great.

JULY 10, 1866.—FIFTY-NINTH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	54	10	91	14	30	2 ☉. On 49′, off 14′ 30″.
0	7	20		14		
	8	45		12		Lat. 66° 29′.3 N.
	10	50		10		
	13	30		8		
4	47	50	54	17		2 ☉.
	48	55		4	30	I. C. − 30″.
	50			53	52	Chron. slow on L. A. T. 41ˢ.

JULY 20, 1866.—SIXTIETH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	56	5	87	47		2 ☉.
	57	45		47		I. C. + 1′.
	59	12		47		
0	0	41		46	30	
	2	50		46		Lat. 66° 29′.1 N.
	9			44		
	10	45		41		
	12	37		38		

AUGUST 31, 1866.—ABOUT THREE MILES NORTH OF SHIP'S HARBOR ISLANDS.

h.	m.	s.	°	′	″	
8	48	28	44			2 ☉. On 31′, off 32′ 30″.
	49	54	43	45		Long. 5ʰ 44ᵐ 20ˢ W.
	51	20		30		Chr. fast on L. M. T. 5ʰ 20ᵐ 15ˢ.

SEPTEMBER 1, 1866.—ABOUT THREE MILES NORTH OF SHIP'S HARBOR ISLANDS.

h.	m.	s.	°	′	″	
5	3	55	62	46		2 ☉. On 30′, off 33′ 30″.
	16	15		53		
	18	13		53		
	22			54		
	26	10		52		
	37	35		43		Lat. 66° 29′.9 N.

APRIL 27, 1867.—SIXTY-FIFTH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	35		74	21		2 ☉. On 39′, off 25′.
	38			18		
	39	40		17		Long. 5ʰ 44ᵐ 20ˢ.
	41			16		Here removed chron. forward 36ᵐ.
0	23		74	7		
	25	30		3		Lat. 66° 26′ N.
3	17	45	55	32		2 ☉. On 38′, off 26′.
	18	55		21		Chron. slow on L. M. T. 17ˢ.
	20	20		8		

Astronomical observations made during the years 1864–'69—Continued.

JUNE 15, 1867.—SIXTY-FIFTH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	38	25	93	8		2 ⊙. On 31′, off 31′.
	44			12	30	
	53			16		
0				16		
	6	5		11		Lat. 66° 26′.1 N.
	10	30		7		
5	6	35	51	23	30	2 ⊙. On 31′, off 32′.
	8	15		2		Chron. slow on L. M. T. 6h 65s.
	9	25	50	49		
5	14		77	6		⊙ to left to mountain.
5	25	20	79	19		⊙ to left to mountain.
	27	10		37		On 30′, off 34. N. 25° W. by C.
	28	40		57		N. 24° W. by C.
						Var. 64° W.
5	37	30	81	42		⊙ to left to mountain.
						⊙ mark S. 79° W. by C.
						Var. 64° W.

JUNE 21, 1867.—SIXTY-FIFTH ENCAMPMENT.

h.	m.	s.	°	′	″	
4	18	15	61			2 ⊙.
	19	35	60	45		I. C. + 2′.
	20	55		30		Chron. slow on L. M. T. 8m 55s.

JUNE 22, 1867.—SIXTY-FIFTH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	39	40	93	23	30	2 ⊙.
	45			26		I. C. + 3′ 30″.
	48			27	30	
	52			27	30	
	56	40		27		
0	6	50		21		
	8	50		20		
	10	20		19	30	Lat. 66° 26′.1 N.

JULY 6, 1867.—SIXTY-FIFTH ENCAMPMENT.

h.	m.	s.		°	′	″	
7	12	16	a.m.	58	26	30	2 ⊙.
4	27	48	p.m.				
7	17	37	a.m.				Chron. slow on L. M. T. 14m 10s.
4	22	32	p.m.				

SEPTEMBER 15, 1867.—IWILLIK.

h.	m.	s.	°	′	″	
11	14	30	52	25		2 ⊙. On 24′, off 41′.
	16	35		25		
	18	22		25		Lat. 66° 30′.6 N.
	21	12		24		
	23	45		23	30	
	25	50		23		

SEPTEMBER 15, 1867.—IWILLIK—Continued.

h.	m.	s.	°	′	″	
2	1	53	40	7		2 ⊙. On 32′, off 32′.
	4		39	48		Chron. slow on L. M. T. 38m 33s.
	5	55		33	30	
	7	25		19		
	9	15		4		

APRIL 3, 1868.—TENTH IGLOO—OO-SOO-AR-KU.

h.	m.	s.	°	′	″	
11	21	30	54	45		2 ⊙. On 28′, off 36′.
	26	42		51		
	29	30		55		
	41	50	55	1	30	
	44	40		2		
	48	35		2		
	50			2		
	52	20		1		
	55	10	54	59		
	59	20		56		
0	3	15		52		Lat. 67° 50′ N.
2	32	30	43			2 ⊙. On 28′, off 37′.
	33	53	42	48		Assumed long. 5h 29m W.
	35			39		Chron. slow on L. M. T. 18m 15s.
	36	30		27		
	37	30		19		

APRIL 14, 1868.—FOURTEENTH IGLOO—OOGLIT ISLANDS.

h.	m.	s.	°	′	″	
11	38	40	60	26		2 ⊙. On 32′, off 32′ 30″.
	42	40		21		
	46	10		11	30	Lat. 68° 59′.5 N.
3	5	30	38	30		2 ⊙. On 32′, off 33′.
						N. 15° W. by C.
	8			5		N. 16° W. by C.
	11	23	37	32		N. 17° W. by C.
						Chron. slow on L. M. T. 55m 55s.
						Var. 98° W.

APRIL 17, 1868.—FIRST IGLOO—HOOPER INLET.

h.	m.	s.	°	′	″	
7	18	40	42	33		2 ⊙. On 30′, off 34′.
						⊙ S. 29½° W. by C.
	21	15		43		⊙ S. 30° W. by C.
	23	10		16		⊙ S. 31° W. by C.
	43					⊙ S. 36° W. by C.
						Chron. slow on L. M. T. 55m 53s.
						Var. 91°.1 W.

APRIL 18, 1868.—SECOND IGLOO—QUILLIAM CREEK.

h.	m.	s.	°	′	″	
9	47	30	59	47	30	2 ⊙. On 28′ 30″, off 35′.
						⊙ S. 84° W. by C.
	50	20	60			⊙ S. 83° (?) W. by C.
	53			11		⊙ S. 86° W. by C.
	56	20		24	30	⊙ S. 87½° W. by C.
	58	43		32	30	⊙ S. 89° W. by C.
10	2	35		47		⊙ S. 89° W. by C.
						Chron. slow on L. M. T. 50m 22s.
						Var. 107°.6 W.

Astronomical observations made during the years 1864–'69—Continued.

APRIL 19, 1868.—THIRD IGLOO—CROZIER RIVER.

h.	m.	s.	°	′	″	
7	11	46	41	40		2 ⊙. On 28′, off 36′.
						⊙ S. 31° W. by C.
	15	30	42	15		⊙ S. 29° W. by C.
	18	28		43		⊙ S. 30° W. by C.
	20	50	43	5		⊙ S. 30½° W. by C.
	23	20		27		⊙ S. 31° W. by C.
						Chron. slow on L. M. T. 50m 21s.
						Var. 93°.6 W.

BETWEEN THIRD AND FOURTH IGLOOS.

h.	m.	s.	°	′	″	
10	55	10	63	11		2 ⊙. On 28′, off 36′.
	57	30		13		⊙ S. 87° W. by C.
11	0	53		14		⊙ S. 87° W. by C.
	2	30		15	30	⊙ S. 88° W. by C.
	5			16	30	⊙ S. 88½° W. by C.
	7	50		17		⊙ S. 89½° W. by C.
	11	15		17		
	14	30		17		⊙ N. 89° W. by C.
	18			17		⊙ N. 88° W. by C.
	21	35		16		⊙ N. 87° W. by C.
	26	5		12	30	⊙ N. 85½° W. by C.
	28	40		10	30	⊙ N. 84½° W. by C.
						Lat. 69° 31′.9 N.
						Var. 89°.4 W.

APRIL 20, 1868.—FOURTH IGLOO—GRINNELL LAKE.

h.	m.	s.	°	′	″	
6	21	38	43	3		2 ⊙. On 30′, off 34′.
						⊙ S. 43° W. by C.
	23	57		25		⊙ S. 43½° W. by C.
	27	15		56		⊙ S. 44° W. by C.
	51					⊙ S. 47° W. by C.
						Chron. slow on L. M. T. 1h 46m.
						Var. 106°.3 W.

APRIL 20, 1868.—BETWEEN FOURTH AND FIFTH IGLOOS.

h.	m.	s.	°	′	″	
9	26		62	39		2 ⊙. On 30′, off 34′.
						⊙ N. 87° W. by C.
	29			45		⊙ N. 86½° W. by C.
	32	50		55		⊙ N. 86° W. by C.
	37	5	63	4		⊙ N. 88° (?) W. by C.
	41			18	30	⊙ N. 86° W. by C.
	47	35		27		⊙ N. 84° W. by C.
	55	15		36		⊙ N. 82½° W. by C.
10	2	40		40	30	⊙ N. 82° W. by C.
	9	5		43		⊙ N. 79° W. by C.
	17	30		43		Lat. 69° 40′.4 N.
						Var. 101° W.

APRIL 22, 1868.—SIXTH IGLOO—ENCAMPMENT BAY.

h.	m.	s.	°	′	″	
9	59	20	58	22	30	2 ⊙. On 32′, off 32′.
						⊙ S. 69° W. by C.
10	6		59	0	30	⊙ S. 70½° W. by C.
	8	40		17		⊙ S. 71½° W. by C.
						Chron. fast on L. M. T. 3m 25s.
						Var. 104°.2 W.

APRIL 22, 1868.—SIXTH IGLOO—ENCAMP'T BAY—Cont'd.

h.	m.	s.	°	′	″	
10	44		62	8		2 ⊙. ⊙ S. 84° W. by C.
	56	20		53		⊙ S. 87½° W. by C.
	59	40	63	5		⊙ S. 88° W. by C.
11	9	5		32	30	⊙ S. 89½° W. by C.
	12	40		43		⊙ S. 89½° W. by C.
	25		64	13	30	⊙ S. 87° W. by C.
	35	7		29		⊙ S. 83° W. by C.
	41	42		40		⊙ S. 83° W. by C.
	47	17		45		⊙ S. 81° W. by C.
	50	30		46	30	⊙ S. 80½° W. by C.
	53	25		48	30	⊙ S. 80° W. by C.
	56	25		50		⊙ S. 79° W. by C.
0	0	15		52		⊙ S. 78° W. by C.
	4	45		52		⊙ S. 77½° W. by C.
	8			52		⊙ S. 77° W. by C.
	10			51		
	12	15		49		⊙ S. 75½° W. by C.
	15	40		47		⊙ S. 75° W. by C.
	18	43		46		⊙ S. 74° W. by C.
	21			44		
	25			39	30	⊙ S. 72½° W. by C.
	30			34		⊙ S. 72° W. by C.
	33	15		27	30	⊙ S. 71° W. by C.
						Lat. 69° 47′.3 N.
						Var. 102°.5 W.
3	39		46	54		2 ⊙. On 29′, off 35′.
						⊙ N. 19½° W. by C.
	42	5		25		⊙ N. 19° W. by C.
	44	15		6		⊙ N. 19° W. by C.
						Chron. fast on L. M. T. 2m 55s.
						Var. 90°.5 W.

APRIL 27, 1868.—NINTH IGLOO, SAME AS SIXTH.

h.	m.	s.	°	′	″	
11	36	30	67	45		2 ⊙. On 28′, off 36′.
						⊙ N. 87° W. by C.
	41	30		51		⊙ N. 81° (?) W. by C.
	46	50		56	30	⊙ N. 79½° W. by C.
	51	10	68	1		⊙ N. 79½° W. by C.
	57	32		2		⊙ N. 79° W. by C.
0	4			2	30	⊙ N. 78° W. by C.
	7	15		2	30	⊙ N. 76° W. by C.
	10	53		2		⊙ N. 75° W. by C.
	15		67	57		⊙ N. 73° W. by C.
	18	3		55	30	
	21	50		52		⊙ N. 70° W. by C.
	25	50		47		Lat. 69° 47′.8 N.
						Var. 103° W.

APRIL 28, 1868.—ISLAND, WEST ENTRANCE TO FURY AND HECLA STRAITS.

h.	m.	s.	°	′	″	
11	40		68	15		2 ⊙. On 29′, off 35′.
	44			17		⊙ N. 76° W. by C.
	47	50		20	30	⊙ N. 74° W. by C.
	51	20		24		⊙ N. 73° W. by C.
	54	30		26	30	⊙ N. 72½° W. by C.
	58			27		⊙ N. 72° W. by C.
0	1			27		⊙ N. 71° W. by C.
	3	45		27		⊙ N. 70½° W. by C.
	6	40		26	30	⊙ N. 70° W. by C.
	10	35		25	30	⊙ N. 68° W. by C.
	15	27		24	30	⊙ N. 67° W. by C.
	18	30		22		⊙ N. 66° W. by C.
	21	20		18		Lat. 69° 54′.5 N.
						Var. 108°.8 W.

Astronomical observations made during the years 1864–'69—Continued.

APRIL 28, 1868.—ISLAND, WEST ENTRANCE, &c.—Cont'd.

h.	m.	s.	°	′	″	
4	27		42	37		2 ☉.
	35	15	41	16		Chron. fast on L. M. T. 1m 3s.
	36	30			4	
	37	50	40	51		
4	45	43	39	31		Chron. fast on L. M. T. 58s.
	47	40			12	
	49	17	38	56		

APRIL 29, 1868.—TENTH IGLOO, NEAR CAPE ENGLEFIELD.

h.	m.	s.	°	′	″	
11	53		69	11	30	2 ☉. On 31′, off 33′.
						☉ N. 72° W. by C.
	57	27		11	30	☉ N. 70° W. by C.
0	1			12		
	4			13		
	5	30		13		
	7	10		13		☉ N. 67° W. by C.
	11	45		11		
	13	30		10		☉ N. 65½° W. by C.
						Lat. 69° 51′.
						Var. 112° W.

MAY 1, 1868.—TENTH IGLOO.

h.	m.	s.	°	′	″	
10	28	29	66	57		2 ☉. On 34′, off 30′.
	30	24	67	6		☉ S. 84° W. by C.
	31	20		10		
	36	6		30		
	37			35		
	38			40		
	45					☉ S. 86° W. by C.
						Chron. slow on L. M. T. 1m 44s.
						Var. 110°.9 W.

MAY 2, 1868.—ELEVENTH IGLOO, NEAR CAPE EAST.

h.	m.	s.	°	′	″	
11	45		71			2 ☉. On 31′, off 33′.
						☉ N. 86° W. by C.
	48	40		1		☉ N. 85° W. by C.
	53			1	30	☉ N. 83½° W. by C.
	55	45		2	30	☉ N. 83° W. by C.
	59			2	30	☉ N. 82° W. by C.
0	0	50		2		☉ N. 81° W. by C.
	4			1		
	6	50		0		☉ N. 81½° W. by C.
	11	30	70	56		☉ N. 80° W. by C.
						Lat. 69° 49′.7 N.
5	1	19	38	17		2 ☉. On Cape East.
	3	27	37	54		
	4	22		46		
	5	13		36		
5	7	20	91	35		☉ to right to mark.
	8	20		28		
	9	18		10		

MAY 2, 1868.—ELEVENTH IGLOO, NEAR CAPE EAST—Cont'd.

h.	m.	s.	°	′	″	
5	10	58	36	39		2 ☉.
	12	40		20		
	13	35		11		
5	16	15	89	37		☉ to right to mark.
5	18	22				☉ N. 6° E. by C.
	20	27				☉ N. 7° E. by C.
5	23	28	34	30		2 ☉. ☉ N. 7½° E.
	26			3		☉ N. 8° E.
	27	38	33	47		☉ N. 8° E.
5	32	32	85	57		☉ to right to mark.
	34	16		41		Bear'g of ☉ mark S. 80° E. by C.
						Alt. of ☉ mark 25′.
						Var. 98° W.

MAY 10, 1868.—OOGLIT ISLANDS.

h.	m.	s.	°	′	″	
11	24	30	77	10		2 ☉. On 30′, off 34′.
						☉ N. 88° W. by C.
	28			10		☉ N. 85½° W. by C.
	31			9	30	
	34	10		9		☉ N. 82° W. by C.
	40			3		☉ N. 81° W. by C.
	43	15		0		☉ N. 81° W. by C.
0	13	30				☉ N. 75° W. by C.
	17					☉ N. 75° W. by C.
						Lat. 68° 58′.4 N.
						Var. 92°.2 W.
4	31	27	42	10		2 ☉. ☉ N. by C.
	33	45	41	44		☉ N. by C.
	35	45		23		☉ N. 1° E. by C.
	50	30				☉ N. 3½° E. by C.
						Chron. slow on L. M. T. 32m 36s.
						Var. 95°.1 W.

MAY 20, 1868.—FIFTH ENCAMPMENT—SECOND JOURNEY FROM OOGLIT.

h.	m.	s.	°	′	″	
9	27		73	5		2 ☉. On 32′, off 32′.
						☉ S. 60° W. by C.
	29			18		☉ S. 60° W. by C.
	31			32		☉ S. 61½° W. by C.
9	36		74			☉ S. 63° W. by C.
	38	35		15		☉ S. 63½° W. by C.
						Chron. slow on L. M. T. 26m 4s.
						Var. 96°.6 W.
11	28	15	79	45		2 ☉. ☉ N. 79° W. by C.
	33	30		45	30	☉ N. 78° W. by C.
	37	40		45		☉ N. 76½° W. by C.
	42			43		☉ N. 75° W. by C.
	49			37		☉ N. 73½° W. by C.
						Lat. 70° 0′.8 N.
						Var. 101°.2 W.
						After meridian observations, chron. set forward 30m.

Astronomical observations made during the years 1864–'69—Continued.

JUNE 3, 1868.—FIRST ENCAMPMENT ON RETURN JOURNEY TO REPULSE BAY.

h.	m.	s.	°	′	″	
8	41	30	86	21	30	2 ⊙. On 35′, off 29′.
	48	20		29		
	57	50		32		
9	3	20		32		
	8	10		28		
	16	30		25		
	21	50		16		Lat. 68° 55′.5 N.

JUNE 4, 1868.—FIRST ENCAMPMENT.

h.	m.	s.	°	′	″	
10	40	40				2 ⊙. On 35′, off 29′.
						⊙ S. 63° W. by C.
	43	55	83	52	30	⊙ S. 65° W. by C.
	46	40	84	4		⊙ S. 65° W. by C.
	48	47		14		⊙ S. 66° W. by C.
						Chron. fast on L. M. T. 2^{m} 25^{s}.
						Var. 87°.8 W.
11	50		86	41		2 ⊙. ⊙ S. 86° W. by C.
	52	50		42		⊙ S. 87° W. by C.
	58	40		45		⊙ W.
0	1	30		44		⊙ N. 89° W. by C.
	5	15		45 (?)		⊙ N. 88° W. by C.
	7	10		45		
	8	50		43	30	
	10	20		42		⊙ N. 85° W. by C.
						Lat. 68° 55′.8 N.
						Var. 90°.4 W.

JUNE 5, 1868.—SECOND ENCAMPMENT ON RETURN.

h.	m.	s.	°	′	″	
11	53	25	87	11	30	2 ⊙. On 35′, off 29′.
	57	10	87	12		Assumed long. 82° 5′ W.
0	2			13		
	4	7		12	30	
	6	40		11	30	
	9			11		
	11	3		10		Lat. 68° 48′.6 N.

JUNE 6, 1868.—SECOND ENCAMPMENT.

h.	m.	s.	°	′	″	
6	13	45	40	6		2 ⊙. On 35′, off 29′.
	15	7	39	52		
	16	13		41		
	19					⊙ N. 10° E. by C.
	20	53	38	50		
6	27	35	89	34		⊙ to right to mark.
	29	10		17		
	30			4		Bear'g of ⊙ mark S. 72° E. by C.
						Var. 94°.2 W.
6	31	47	36	55		2 ⊙.
	33	4		43		
	34	25		28		
6	37	35				⊙ N 15° E. by C.
7	8					⊙ N. 17° (?) E. by C.
						Chron. fast on L. M. T. 5^{m} 9^{s}.
						Var. 95°.2 W.

JUNE 13, 1868.—FIFTH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	46	45	90	30		2 ⊙. On 28′, off 36′.
	49	15		34		Assumed long. 82° 52′ W.
	53	10		37		⊙ S. 75° W. by C.
	58	20		42 (?)		⊙ S. 76° W. by C.
0	3	25		43		⊙ S. 77° W. by C.
	7			43		⊙ S. 80° W. by C.
	15			41		⊙ S. 86° (?) W. by C.
	36					⊙ S. 88° W. by C.
						Lat. 67° 37′.4 N.
						Var. 79°.3 W.
4	50	25	56	35		2 ⊙. On 28′, off 36′.
	52			18		Chron. fast on L. M. T. 5^{m} 47^{s}.
	53	20		2		

JUNE 15, 1868.—SIXTH ENCAMPMENT.

h.	m.	s.	°	′	″	
8	43	27	71	2		2 ⊙. On 32′, off 32′.
	44	54		18		
	45	57		29		
	52	12	72	32		⊙ S. 7° W. by C.
	54	50		59		⊙ S. 19° W. by C.
	58	24	73	33		⊙ S. 20° W. by C.
9	0	32		55		⊙ S. 20° W. by C.
	2	55	74	18		⊙ S. 21° W. by C.
						Chron. fast on L. M. T. 10^{m} 7^{s}.
						Var. 76°.3 W.
11	55	25	91	21		2 ⊙. On 32′, off 32′.
						⊙ S. 80° W. by C.
	58	55		23	30	⊙ S. 80½° W. by C.
0	1	45		25		⊙ S. 81½° W. by C.
	5	15		27	30	⊙ S. 83° W. by C.
	7	30		28		⊙ S. 85° W. by C.
	10	30		28		⊙ S. 86° W. by C.
	13			27	30	
	18			27		⊙ S. 86° W. by C.
	23	55		23		
	27	25		20		⊙ S. 87° W. by C.
						Lat. 67° 22′ N.
						Var. 84°.4 W.

JUNE 19, 1868.—EIGHTH ENCAMPMENT.

h.	m.	s.	°	′	″	
1	46	45	88			2 ⊙. On 26′, off 38′.
	49	8	87	46		Chron. fast on L. M. T. 16^{m} 6^{s}.
	51	45		32		Lat. 66° 54′ N.
						Assumed long. 84° 21′ W.
5	57	40	46	3		2 ⊙. On 19′, off 45′.
	59	55	45	38		Chron. set back 19 minutes.
6	7		44	16		
6	23	57	41			2 ⊙. On 19′, off 45′.
	25	45	40	38	30	Chron. fast on L. M. T. 16^{m} 7^{s}.
	27	50		15		

Astronomical observations made during the years 1864–'69—Continued.

JUNE 23, 1868.—NINTH ENCAMPMENT.

h.	m.	s.	°	′	″	
4	15					☉ S. 50° E. by C.
	21					☉ S. 46½° E. by C.
	25					☉ S. 46° E. by C.
	26					☉ S. 47° E. by C.
	27					☉ S. 47° E. by C.
	28					☉ S. 46° E. by C.
	30					☉ S. 47° E. by C.
	32					☉ S. 46° E. by C.
	35					☉ S. 45½° E. by C.
	39					☉ S. 44° E. by C.
	43					☉ S. 44° E. by C.
	44					☉ S. 44° E. by C.
	45					☉ S. 44° E. by C.
	46					☉ S. 43½° E. by C.
	49					☉ S. 43° E. by C.
	54					☉ S. 41° E. by C.
	56					☉ S. 41° E. by C.
	59					☉ S. 40½° E. by C.
5	0					☉ S. 40° E. by C.
	4					☉ S. 39° E. by C.
5	52	30	40			2 ☉. On 32′, off 32′.
	55	8		33	30	Chron. fast on L. M. T. 2ᵐ 32ˢ.
	57	25	41			
6	5					☉ S. 24° E. by C.
	9					☉ S. 22½° E. by C.
	10					☉ S. 23° E. by C.
	11	30				☉ S. 22½° E. by C.
10	45	55	89	41		2 ☉. On 32″, off 31′ 30″.
	48	17		53		Chron. fast on L. M. T. 2ᵐ 48ˢ.
	49	17		58		
	55	55	90	30	30	☉ S. 51½° W. by C.
11	0	10		49		☉ S. 52° W. by C.
	4	36	91	8	30	☉ S. 54° W. by C.
	18					☉ S. 56½° W. by C.
	41	20				☉ S. 70° W. by C.
	49	20				☉ S. 70° W. by C.
	52		93	7		☉ S. 70° W. by C.
	56	55		10		☉ S. 72° W. by C.
0	2			12		☉ S. 74° W. by C.
	4	40		12		☉ S. 75° W. by C.
	8			12		☉ S. 76° W. by C.
	12			10		☉ S. 77½° W. by C.
	16	15		9		☉ S. 79° W. by C.
						Lat. 66° 34′.9 N.
						Var. 75°.2 W.

JUNE 25, 1868.—ELEVENTH ENCAMPMENT.

h.	m.	s.	°	′	″	
8	37	30	113	15		☉ to right to mountain.
						Elevation 250 feet above sea.
8	44	30	72	22		2 ☉. On 30′, off 34′.
	46	10		38		
	47	30		54		
8	49	50	110	23		☉ to right to mountain.
	52	10	109	47		
	54	17		22		☉ mark by C. N. 48° W.
						Var. 77°.0 W.

JUNE 25, 1868.—ELEVENTH ENCAMPMENT—Continued.

h.	m.	s.	°	′	″	
8	56	20	74	24	30	2 ☉.
	57	22		35		Chron. fast on L. M. T. 6ᵐ 31ˢ.
	59			52		
9	1	45	76	22	30	2 ☉. On 30′, off 33′ 30″.
						☉ S. 21° W. by C.
	5			22		2 ☉. ☉ S. 22° W. by C.
	7	50		22		2 ☉. ☉ 22¾° W. by C.
9	59					☉ S. 37° W. by C.
						☉ mark N. 48° W. by C.
10	5					☉ S. 38½° W. by C.
11	14	8	91	30		2 ☉. On 30′, off 34′.
	15	50		37	30	
11	25		75	51		☉ to right to same mountain.
	27	25		17		
	29			10		
11	33	47	92	32		2 ☉.
	35	35		35		
	45	40		54		
	47	40		57		
11	54	53	93	9		2 ☉. On 30′, off 34′.
						☉ S. 73° W. by C.
	57	37		11		☉ S. 74° W. by C.
0	0	30		12		☉ S. 75° W. by C.
	3	55		13		☉ S. 75¾° W. by C.
	6	30		13	30	☉ S. 76¾° W. by C.
	10			15		☉ S. 77½° W. by C.
	13	10		14	30	☉ S. 79° W. by C.
	18					☉ S. 80° W. by C.
	20			11	30	
	22	5		10		☉ S. 82° W. by C.
						Lat. 66° 29′.5 N.
						Var. 77°.6 W.

NOVEMBER 11, 1868.—FIRST ENCAMPMENT.

h.	m.	s.	°	′	″	
8	58		48	5		2 ☿. I. C. – 2′ 30″.
9	22	30	47	50	30	Ther. – 26°.
						Long. assumed 5ʰ 44ᵐ 8ˢ W.
						Chron. fast on L. M. T. 1ᵐ 3ˢ.
						Lat. 66° 30′.7 N.

NOVEMBER 12, 1868.—SECOND ENCAMPMENT.

h.	m.	s.	°	′	″	
8	17		47	52		2 ☿. I. C. – 2′ 30″.
						☿ S. 67° W. by C.
	36			50		☿ S. 70° W. by C.
	48	40		35		☿ S. 72° W. by C.
9	16					☿ S. 78° W. by C.
						Ther. – 28°.
						Lat. 66° 35′ N.
						Var. 67°.1 W.

Astronomical observations made during the years 1864–'69—Continued.

NOVEMBER 14, 1868.—THIRD ENCAMPMENT.

h.	m.	s.	°	′	″	
10	32		9	10		2 ☉. Ass'd long. $5^h\ 42^m\ 12^s$ W.
						☉ S. 72° W. by C.
	42			15	30	☉ S. 75° W. by C.
						Lat. 66° 48′.8 N.
						Ther. — 10°.
						Var. 75°.1 W.

NOVEMBER 17, 1868.—FOURTH ENCAMPMENT.

h.	m.	s.		°	′	″	
10	2	15	a.m.	36	43		2 ☿. Ass'd long. $5^h\ 41^m\ 43^s$ W.
							☿ S. 72° W. by C.
	16			37	8		☿ S. 76° W. by C.
	42	15			32		☿ S. 83° W. by C.
	52				32		☿ S. 83° W. by C.
							Lat. 66° 57′.9 N.
							Var. 85°.3 W.

NOVEMBER 18, 1868.—FIFTH ENCAMPMENT.

h.	m.	s.		°	′	″	
7	33	a.	m.	32	43	30	2 ☿. ☿ S. 58° W. by C.
8	53						☿ S. 80° W. by C.
							Lat. 66° 59′ N.
							Var. 82°.7 W.

NOVEMBER 19, 1868.—SIXTH ENCAMPMENT.

h.	m.	s.	°	′	″	
7	11	33	44	51		2 ♃. I. C. — 2′ 30″.
						♃ S. 66° W. by C.
	24	24	45	34		♃ S. 69° W. by C.
	40	19	46	13	30	♃ S. 72° W. by C.
						Ther. + 18°.
						Lat. 67° 1′ N.
						Var. 83°.4 W.

NOVEMBER 20, 1868.—SEVENTH ENCAMPMENT.

h.	m.	s.	°	′	″	
9	14	25	45	3		2 ♃. ♃ N. 79° W. by C.
						Lat. 66° 56′.5 N.
						Var. 83°.6 W.

NOVEMBER 21, 1868.—EIGHTH ENCAMPMENT.

h.	m.	s.	°	′	″	
7	22	50	46	43		2 ♃. ♃ S. 90° W. by C.
	35	30		22	30	Lat. 67° N.
						Var. 83° W.

NOVEMBER 23, 1868.—EIGHTH ENCAMPMENT.

h.	m.	s.	°	′	″	
6	41		32	5		2 ☽. I. C. — 2′ 30″.
	49	20		8		☽ S. 83° W. by C.
7	6	25		5		Large sextant.
						Lat. 67° N.

NOVEMBER 23, 1868.—EIGHTH ENCAMPMENT—Continued.

h.	m.	s.	°	″	′	
7	0	20	32	12		2 ☽. Small sextant.
	8	25		8		I. C. — 2′ 30″.
	14	30		3	30	
7	30	30	46	50		2 ♃. Large sextant.
	41	45		47		Lat. 67° 0′.1 N.
7	33	53	46	53	30	2 ♃. Small sextant.
	44	20		48		♃ N. 90° W. by C.
						Lat. 67° 0′ N.
						Var. 87°.5 W.

NOVEMBER 26, 1868.—NINTH = FOURTH ENCAMPMENT.

h.	m.	s.	°	′	″	
7	53		46	50		2 ♃.
	57	30		49		♃ N. 90° W. by C.
8	3			43		Lat. 66° 57′.8 N.
	7	40		37		Var. 84°.5 W.

APRIL 13, 1869.—WEST SIDE PELLY BAY.

h.	m.	s.	°	′	″	
11	55	40	60	55	20?	2 ☉. On 30′, off 35′.
						☉ S. 86° W. by C.
0	0	30		50	30?	☉ S. 87° W. by C.
	4	7		48	30	☉ S. 89° W. by C.
	6	45		45		☉ S. 89° W. by C.
	10	15		40		☉ S. 90° W. by C.
						Lat. 68° 30′ N.

EIGHTEENTH ENCAMPMENT.

h.	m.	s.	°	′	″	
3	42	8	39	41		2 ☉. On 21′ 30″, off 43′ 30″.
						☉ N. 34° W. by C.
	45	40		0		☉ N. 34° W. by C.
	49	7	38	26		☉ N. 33° W. by C.
						Ther. — 12°.
						Chron. slow on L. M. T. $9^m\ 4^s$.
						Mag. var. 82°.8 W.

APRIL 21, 1869.—TWENTIETH ENCAMPMENT.

h.	m.	s.	°	′	″	
11	47		66	30		2 ☉. On 33′, off 31′.
						☉ S. 65° W. by C.
	52			33		☉ S. 67° W. by C.
	56	30		35		☉ S. 72° W. by C.
0	2			36		☉ S. 74° W. by C.
	7			35	15	☉ S. 76° W. by C.
	12	20		33	30	☉ S. 80° W. by C.
	18			29	30	☉ S. 85° W. by C.
						Lat. 68° 31′.1 N.
5	37	8	26	45		2 ☉.
	38	35		30		
	39	57		15		☉ N. 15° W. by C.
	44		25	30		☉ N. 13° W. by C.
	47			0		☉ N. 12° W. by C.
	51	15	24	12		☉ N. 11° W. by C.
						Chron. fast on L. M. T. $3^m\ 41^s$.
						Var. 76°.6 W.

Astronomical observations made during the years 1864–'69—Continued.

APRIL 26, 1869.—TWENTY-THIRD ENCAMPMENT.

h. m. s.	° ′ ″	
11 41 43	69 46	2 ⊙. On 32′, off 32′.
		⊙ S. 51° W. by C.
45 25	49 30	⊙ S. 52° W. by C.
49 45	51 30	⊙ S. 53° W. by C.
55 5	55 15	⊙ S. 54° W. by C.
0 0 55	56	⊙ S. 57° W. by C.
5 45	54	⊙ S. 57° W. by C.
11	51	⊙ S. 59° W. by C.
16 45	44	⊙ S. 60° W. by C.
20 45	42	⊙ S. 59° (?) W. by C.
		Lat. 68° 29′.9 N.
5 45 33	27 45	2 ⊙. ⊙ N. 27° W. by C.
48 20	15	⊙ N. 26° W. by C.
51 25	26 42	⊙ N. 25° W. by C.
57 25	25 30	Chron. fast on M. L. T. $1^m\ 35^s$.
58 44	15	Var. 61°.3 W.
6 0 2	0	

APRIL 28, 1869.—TWENTY-FOURTH ENCAMPMENT.

h. m. s.	° ′ ″	
0 32 30	68 35	2 ⊙. On 32′, off 32′.
		⊙ S. 87° W. by C.
36 35	18	⊙ S. 88° W. by C.
40	3	
42 40	67 51	⊙ S. 90° W. by C.
		Chron. slow on L. M. T. $36^m\ 8^s$.
		Lat. 68° 38′ N.

MAY 13, 1869.—THIRTIETH ENCAMPMENT.

h. m. s.	° ′ ″	
	79 45	2 ⊙. On 31′ 30″, off 32′ 30″.
		⊙ S. 40° E. by C.
	45	⊙ S. 45° E. by C.
	45 30	⊙ S. 45° E. by C.
	45 30	⊙ S. 43° E. by C.
	44 30	⊙ S. 40° E by C.
	41 45	As. long. $6^h\ 26^m\ 40^s$ W.
	89	Lat. 68° 23′.8 N.

MAY 16, 1869.—THIRTY-FIRST ENCAMPMENT.

h. m. s.	° ′ ″	
	40 19	⊙. Sea horizon. I. C. + 4′.
		⊙ S. 47° W. by C.
	21	⊙ S. 45° W. by C.
	23	⊙ S. 43° W. by C.
	25	⊙ S. 41° W. by C.
	25	⊙ S. 42° (?) W. by C.
		As. long. $6^h\ 18^m$ W.
		Lat. 68° 32′.2 N.

MAY 23, 1869.—THIRTY-FIFTH ENCAMPMENT.

h. m. s.	° ′ ″	
	83 38	2 ⊙. On 26′, off 37′.
		⊙ S. 61° W. by C.
	39	⊙ S. 62° W. by C.
	40	
	41 30	⊙ S. 64° W. by C.
	39	⊙ S. 66° W. by C.
		As. long. $6^h\ 10^m$ W.
		Lat. 68° 33′.1 N.

JUNE 4, 1869.—FORTY-FIRST ENCAMPMENT.

h. m. s.	° ′ ″	
	88 21 30	2 ⊙. On 27′, off 37′.
		⊙ S. 75° W. by C.
	19	⊙ S. 76° W. by C.
	18	⊙ S. 77° W. by C.
	15	⊙ S. 80° W. by C.
		As. long. $5^h\ 55^m$ W.
		Lat. 68° 2′.1 N.

JULY 31, 1869.—LOW-TIDE ENCAMPMENT.

h. m. s.	° ′ ″	
	82 50	2 ⊙. On 31′, off 32′ 30″.
		⊙ S. 59° W. by C.
	48	⊙ S. 60° W. by C.
	46	⊙ S. 61° W. by C.
	44	⊙ S. 62° W. by C.
	38 30	⊙ S. 63° W. by C.
	35	⊙ S. 64° W. by C.
	31	⊙ S. $65\frac{1}{2}$° W. by C.
		As. long. $5^h\ 46^m\ 40^s$ W.
		Lat. 66° 29′.3 N.

AUGUST 3, 1869.—SAME PLACE.

h. m. s.	° ′ ″	
	81 4	2 ⊙. On 32′, off 31′.
	8 30	
	13	
	15 15	
	18 15	
	18 15	
	17	
	15	Lat. 66° 29′.5 N.

AUGUST 19, 1869.—NEAR WHALE POINT.

h. m. s.	° ′ ″	
11 45	75 53	2 ⊙. On 33′ 30′, off 30′ 30″.
		⊙ S. 29° W. by C.
48 40	56 30	⊙ S. 30° W. by C.
53 15	76	⊙ S. $31\frac{1}{2}$° W. by C.
58 15	2	⊙ S. 33° W. by C.
0 2	2 30	⊙ S. 34° W. by C.
4 45	2 30	⊙ S. 35° W. by C.
10	1	⊙ S. 36° W. by C.
13 25	75 58	⊙ S. 38° W. by C.
17 40	56	⊙ S. $39\frac{1}{2}$ W. by C.
		As. long. $5^h\ 51^m\ 40^s$ W.
		Lat. 64° 21′.7 N.

AUGUST 20, 1869.—SAME PLACE.

h. m. s.	° ′ ″	
4 21 35	43 11	2 ⊙. On 33′ 30″, off 30′ 30″.
24 37	42 32	
27	0	
37		⊙ N. 70° W. by C.
		Watch slow on L. M. T. 30^s.
		Var. 34°.2 W.

AUGUST 29, 1869.—ROWE'S WELCOME.

h. m. s.	° ′ ″	
	35 35	⊙. Sea horizon. I. C. − 2′ 30″.
		Altitude of eye, 14 feet.
		As. long. $5^h\ 52^m\ 29^s$ W.
		Lat. 63° 27′.3 N.

Astronomical observations made during the years 1864–'69—Continued.

AUGUST 30, 1869.—ROWE'S WELCOME.

h.	m.	s.	°	′	″	
11	40	45	35	30	30	⊙. I. C. – 2′ 30″.
	44	40		32		Eye above sea, 14 feet.
	47	30		32		As. long. $5^h\ 45^m\ 42^s$ W.
	50	30		32		
	54	15		31		
	57			30		Lat. 63° 8′.9 N.

SEPTEMBER 2, 1869.—HUDSON'S STRAIT.

h.	m.	s.	°	′	″	
			24	32		⊙. Sea horizon. I. C. – 3′.
						As. long. $5^h\ 10^m\ 40^s$ W.
						Dip – 4′.
						Lat. 63° 5′ N.

SEPTEMBER 5, 1869.—HUDSON'S STRAIT.

h.	m.	s.	°	′	″	
8	7	20	26	44		⊙. I. C. – 3′. Dip – 3′ 40″.
						Watch slow on L. M. T. $57^m\ 2^s$.
11	20		35	35		As. long. $4^h\ 30^m\ 4^s$ W.
	35			35		Lat. 60° 54′.9 N.

SEPTEMBER 6, 1869.—HUDSON'S STRAIT.

h.	m.	s.	°	′	″	
11	16	15	35	46	30	⊙. I. C. – 3′.
	25	25		42		Eye above sea, 12 feet.
						As. long. $4^h\ 8^m$ W.
						Lat. 60° 20′.8 N.

APPENDIX II.

METEOROLOGICAL JOURNAL KEPT BY MR. C. F. HALL ON HIS SECOND ARCTIC EXPEDITION, JULY, 1864—APRIL, 1869.

APPENDIX II.

HALL'S METEOROLOGICAL JOURNAL, 1864–'69.

TABULATED BY MR. R. W. D. BRYAN,
Assistant in the preparation of this Narrative, under the orders of the Navy Department.

METEOROLOGICAL JOURNAL.†

Locality.	Date.	Ther.	Monticello's mercurial Barom.	Wind.‡	Sky.	Remarks.
	1864.	°	*In.*			
At sea*	July 5, 7 a. m.	64	29.80			
	m.	68	.84			
At sea	6, 7 a. m.	65	.96			
	m.	67	.97			
	7 p. m.	69	.95			
At sea	7, 7 a. m.	69	.90			
	m.	71	.88			
	7 p. m.	70	.80			
	8, 7 a. m.	60	.80			
Lat. 42° 15′ N.	m.	64	.83			
Long. 56° 37′ W.	7 p. m.	68	.80			
	9, 7 a. m.	58	.78			
Lat. 42° 46′ N.	m.	54	.80			
Long. 54° 56′ W.	7 p. m.	57	.80			
	10, 7 a. m.	60	29.97			
Lat. 43° 18′ N.	m.	.....	.....			
Long. 53° 15′ W.	7 p. m.	.....	.....			
	30, 7 a. m.	34	29.26	ESE...Fresh		Fog; rain.
Lat. 52° 27′ N.	m.	34	.30	ENE...Gale	Cloudy	
Long. 59° 56′ W.	7 p. m.	.....	.50	E.byN...Gale	Cloudy	
	31, 7 a. m.	35	.62	Calm		
Lat. 61° 36′ N.	m.	36	.75	Calm		
Long. 67° 00′ W.	7 p. m.	33	29.71	Calm		
			Aneroid Bar.			
Davis Strait.	Aug. 1, 7 a. m.	31	29.75	Calm	Hazy; clear.	
Lat. 61° 37′ N.	m.	37	.74	Calm	Hazy; clear.	
Long. 67° 17′ W.	7 p. m.	31	.73	WNW....2	Hazy; clear	
	2, 7 a. m.	32	.68	W. by N....5	Hazy	
Lat. 61° 38′ N.	m.	35	.66	W. by N....4	Cloudy	
Long. 67° 34′ W.	7 p. m.	32	.64	SW....4	do	

*Hall sailed from New London, on board the bark Monticello, July 1, 1864. Observations were generally made thrice daily, viz, a. m., noon, and p. m.

†The defective condition of his instruments is frequently referred to in the preceding pages of the Narrative.

‡Figures to denote the force of the wind: 0, calm; 1, light air; 2, light breeze; 3, gentle breeze; 4, moderate breeze; 5, fresh breeze; 6, strong breeze; 7, moderate gale; 8, fresh gale; 9, strong gale; 10, whole gale; 11, storm; 12, hurricane.

AUGUST, 1864.

Locality.	Date.	Ther.	Aneroid Bar.	Wind.	Sky.	Remarks.
	1864.	°	*In.*			
Davis Strait.	Aug. 3, 7 a. m.	33	29.62	SW.....2	Hazy; cl'dy.	
Lat. 61° 35′ N.	m.	35	.59	SW.....1	Hazy; cl'dy.	
Long. 67° 51′ W.	7 p. m.	31	.57	SW.....1	....do	
	4, 7 a. m.	32	.25	NNW 2	Fog	
Lat. 61° 39′ N.	m.	32	.31	NW. by W ..5	Thick fog...	
Long. 68° 08′ W.	7 p. m.	32	.32	NW. by W ..6	Cloudy	
	5, 7 a. m.	34	.42	NW. by W ..3	....do	
Lat. 61° 42′ N.	m.	34	.56	NNW 3	....do	
Long. 68° 26′ W.	7 p. m.	34	.68	W. by N....4	... do	
	6, 7 a. m.	33	.77	W. by N....4	... do	
Lat. 61° 48′ N.	m.	36	.79	NW. by W. 5	....do	
Long. 68° 43′ W.	7 p. m.	34	.84	NNW.....3	....do	
	7, 7 a. m.	33	.91	NW. by W..5	Few clouds.	
Lat. 62° 01′ N.	m.	38	.88	WNW 5	... do	
Long. 69° 00′ W.	7 p. m.	36	.85	WNW.....3	....do	
	8, 7 a. m.	36	.75	S. by E 2	Cloudy	
Lat. 62° 16′ N.	m.	38	.67	S. by E 3	....do	Passing showers.
Long. 70° 40′ W.	7 p. m.	38	.64	S. by E 1	Overcast...	
	9, 7 a. m.	36	.55	SE 3	....do	
Lat. 62° 43′ N.	m.	38	.45	SE..... ...4	Cloudy	
Long. 72° 33′ W.	7 p. m.	37	.38	SE.....4	....do	
	10, 7 a. m.	38	.37	SE..... 4	Few clouds.	
Lat. 63° 48′ N.	m.	38	.43	SE.....4	Cloudy	
Long. 75° 00′ W.	7 p. m.	36	.49	ESE.....4	....do	Sea-water 34°. Hy. 12.
	11, 7 a. m.	36	.53	Baffling.....1	Few clouds.	
Lat. 63° 07′ N.	m.	45	.71	SSE.....2	....do	
Long. 77° 08′ W.	7 p. m.	41	.68	SSE.....3	...do	Sea-water 39°.
	12, 7 a. m.	40	.62	Calm	Cloudy	
Lat. 62° 24′ N.	m.	41	.53	Calm	Fog.....	
Long. 79° 34′ W.	7 p. m.	42	.44	SE.....4	.....	
	13, 7 a. m.	41	28.99	E 5	Rain.....	
Lat. 61° 43′ N.	m.	39	.89	ENE..... 5	... do	
Long. 82° 00′ W.	7 p. m.	38	29.20	N.....6	Threatening	Sea-water 38°. Hy. 12.
	14, 7 a. m.	37	.20	NW 4	Gloomy.....	
Lat. 60° 59′ N.	m.	40	.26	W 4	Cloudy	
Long. 84° 27′ W.	7 p. m.	38	.24	W. by S.....5	....do	
	15, 7 a. m.	39	.20	SW 3	Few clouds.	
Lat. 61° 33′ N.	m.	41	.18	SW 3	....do	
Long. 85° 16′ W.	7 p. m.	40	.22	SSW.....3	Threatening	
	16, 7 a. m.	41	.23	NNE.....6	Overcast....	Rain.
Lat. 62° 14′ N.	m.	40	.34	N.....8	....do	Rain.
Long	7 p. m.	40	.32	NW. by N...8	... do	Rain.
	17, 7 a. m.	39	.34	N. by E.....8	....do	
Lat. 62° 08′ N.	m.	39	.38	NW 7	Threatening	Misty.
Long. 88° 40′ W.	7 p. m.	40	.46	NW 5	... do	Misty.
	18, 7 a. m.	40	.45	NW 4	Cloudy	
Lat. 62° 09′ N.	m.	45	.47	NW. by W..3	....do	
Long. 90° 20′ W.	7 p. m.	42	.50	Calm	... do	
	19, 7 a. m.	42	.48	NW. by W..4	... do	
Lat. 62° 44′ N.	m.	46	.47	WNW.....3	... do	
Long. 89° 40′ W.	7 p. m.	43	.47	WNW.....4	....do	
Depot Island.	20, 7 a. m.	42	.53	W. by N.....3	....do	
Lat. 63° 47′ N.	m.	47	.58	NW 2	....do	Hazy.
Long. 89° 51′ W.	7 p. m.	42	.60	NW 2	....do	Passing showers.
Do.....	21, 7 a. m.	40	.63	NW 4	....do	
	m.	46	.65	NW 3	....do	Hazy; passing showers.
	7 p. m.	42	.63	S..... 2	....do	Hazy.
Do	22, 7 a. m.	44	.66	SSW.....3	....do	Hazy.
	m.	47	.60	SSW.....3	Overcast...	
	7 p. m.	45	.58	E 6	...do	
Do	23, 7 a. m.	44	.60	NE 7	Cloudy	Fog.
	m.	47	.61	NE 7	Overcast...	
	7 p. m.	43	.55	NE 7	....do	
Do	24, 7 a. m.	46	.53	NE 4	Cloudy	Fog.
	m.	46	.50	NE 4	... do	
	7 p. m.	44	.48	NE 6	... do	
Do	25, 7 a. m.	43	.50	NE 7	Overcast...	
	m.	50	.57	NE 6	Cloudy	
	7 p. m.	42	.65	NE 4	....do	Aurora in evening.

AUGUST—SEPTEMBER, 1864.

Locality.	Date.	Ther.	Aneroid Bar.	Wind.	Sky.	Remarks.
	1864.	°	*In.*			
Depot Island:	Aug. 26, 7 a. m.	41	29.74	NE 5	Few clouds.	
On the Tender	m.	50	.70	NE 4	...do	
Helen F.	7 p. m.	46	.68	SE 1	...do	
Do	27, 7 a. m.	42	.50	S 3	do	Fog.
	m.	52	.48	NW 4	Cloudy	"Fog-eater" morn, but disappeared at 8.
	7 p. m.	44	.56	N 3	Few clouds.	
Do	28, 7 a. m.	40	.68	NNW. . .. 5	...do	
	m.	44	.68	NNW.....4	...do	
	7 p. m.	42	.70	NNW.....2	.. do	
Do	29, 7 a. m.	43	.66	NE . .. 1	Cloudy	Hazy.
*Started from	m.	52	.66	NE. by E.. 1	Few clouds.	
Depot Island.	7 p. m.	40	.68	S 5	... do	Aurora 12 p. m., fine.
	30, 7 a. m.	40	.75	NNW. 5	Cloudy	Hazy.
Lat. 64° 11′ N.	m.	53	.80	NW 2	Few clouds	
Long. 88° 41′ W.	7 p. m.	40	.81	S. by E 2	.. do	Aurora.
Landed	31, 7 a. m.	41	.96	N 4	Cloudy	Hazy.
1st Enc't.	m.	48	.94	S 2	Few clouds.	
Lat. 64° 35′ N.	7 p. m.	38	30.06	S 4	....do	
Long. 87° 32′ W.						
Do	Sept. 1, 7 a. m.	35	30.00	S 4	Cloudy	Misty.
	m.	37	.12	S 5	... do	[arranged, but reset.
	7 p. m.	48	.18	S 5	Overcast ..	The barometer capsized and dis-
Do .	2, 7 a. m.	40	.26	WSW.....4	....do	
	m.	47	.22	S 5	Cloudy	Hazy.
	7 p. m.	37	.24	S 5	....do	Hazy.
2d Enc't.	3, 7 a. m.	38	.27	SW..... .4	....do	
Lat. 64° 50′ N.	m.	45	.25	SSW.....3	.. do	
Long. 87° 15′ W.	7 p. m.	38	.37	S 3	... do	Hazy.
Do.....	4, 7 a. m.	41	.46	S 3	Few clouds.	
	m.	48	.40	WSW.....5	....do	
	7 p. m.	39	.40	SW.....	...do	
Do.....	5, 7 a. m.	40	.41	S 4	... do	
	m.	54	.35	S 5	Threatening	
	7 p. m.	42	.06	S 3	Few clouds.	
Do	6, 7 a. m.	43	29.93	S 3	....do	
	m.	50	.88	S 5	Cloudy	Threatening.
	7 p. m.	41	.88	S 2	Few clouds.	
Do.....	7, 7 a. m.	39	.88	N 1	.. do	
	m.	49	.76	E 1	....do	
	7 p. m.	33	.84	NE.....1	Cloudy	Threatening.
Do.....	8, 7 a. m.	34	30.02	N..... 6	....do	This morn spit snow.
	m.	40	.06	E. by N 4	Few clouds.	
	7 p. m.	34	.14	N..... 6	...do	
3d Enc't.	9, 7 a. m.	26	.24	NE 3	Cloudy	Hazy. } Encampments Nos. 3, 4, 5,
Lat. 64° 46′.3 N.	m.	40	.14	NE 2	....do	Hazy. } 6, and 7 were all in the
Long. 87° 14′ W.	7 p. m.	32	.10	W..... ... 2	....do	Hazy. } locality called Noowook.
Do	10, 7 a. m.	25	.02	W 2	Few clouds.	
	m.	47	29.90	N. by W....2	Cloudy	
	7 p. m.	38	.93	SW 2	Few clouds.	
Do... .	11, 7 a. m.	38	.93	SW 3	Cloudy	
	m.	42	.89	SSW. 3	....do	
	7 p. m.	40	.95	SW 2	Overcast	Rain one hour in the night.
Do	12, 7 a. m.	37	.79	SSW.....2	Fog; misty.	Thick fog.
	m.	40	.73	S. by W.....4	Misty.....	Rain.
	7 p. m.	34	.73	S. by W.....4	Overcast....	
Do.....	13, 7 a. m.	35	.54	E 3	Misty.....	
	m.	37	.32	ESE..... 5	... do	Rain and heavy sea.
	7 p. m.	35	.20	ESE..... 2	... do	Rain during night.
Do	14, 7 a. m.	37	.01	SSW..... 2	Cloudy.	Fog.
	m.	42	28.98	S 3	....do	
	7 p. m.	38	29.04	NW . .. 2	....do	
Do	15, 7 a. m.	35	.04	N. by W....5	Overcast....	
	m.	38	.34	N..... 7	Cloudy	
	7 p. m.	30	.65	N..... 5	Few clouds	
Do.....	16, 7 a. m.	24	.84	N. by W....3	Cloudy	
	m.	30	.74	NW..... 3	....do	3 p. m. ring around sun.
	7 p. m.	30	.78	NNW. 1	....do	
Do...	17, 7 a. m.	24	.76	NNE 1	....do	
	m.	31	.70	W. by N....1	....do	
	7 p. m.	28	.62	WSW.....1	Few clouds.	
4th Enc't.	18, 7 a. m.	30	.46	S 3	Overcast....	
Lat. 64° 46′.5 N.	m.	32	.45	S 2	.. do	
Long. 87° 14′ W.	7 p. m.	28	.32	ESE 3	.. do	

SEPTEMBER—OCTOBER, 1864.

Locality.	Date.	Ther.	Aneroid Bar.	Wind.	Sky.	Remarks.
	1864.	°	*In.*			
4th Enc't.	Sept. 19, 7 a. m.	30	29.28	NE 2	Overcast....	
Lat. 64° 46'.5 N.	m.	30	.36	NE. by E ...3	....do	
Long. 87° 14' W.	7 p. m.	30	.48	NE. by E ...5	Cloudy	
Do	20, 7 a. m.	28	.64	NE 4	....do	
	m.	32	.70	N..... 4	Overcast....	
	7 p. m.	28	.73	N.....5	Cloudy	Snow-squalls in afternoon. Aurora at night.
Do.....	21, 7 a. m.	26	.67	N..... 5	Overcast....	Light snow.
	m.	29	.62	N.....6	Misty.....	
	7 p. m.	30	.62	N..... 5	....do	
Do.....	22, 7 a. m.	31	.57	NNE 6	Gloomy	Snow and rain.
	m.	32	.58	N. by E.....4	Overcast....	
	7 p. m.	32	.58	N..... 2	....do	
Do.....	23, 7 a. m.	35	.59	S 1	....do	Spit snow now and then.
	m.	36	.58	S 1	... do	Spit snow. [night.
	7 p. m.	32	.60	Calm	....do	Spit snow ¼ in. Snow during the
Do.....	24, 7 a. m.	33	.58	S. by W.....1	....do	
	m.	35	.56	SW.....1	....do	
	7 p. m.	32	.58	Calm	Cloudy ...	
Do.....	25, 7 a. m.	32	.58	NE 2	... do	
	m.	32	.50	NNE 6	Overcast....	Snow. Sun out for one hour this a. m.
	7 p. m.	30	.41	N.....7	....do	Snow.
Do.....	26, 7 a. m.	29	.38	NNW.....4	....do	
	m.	31	.36	NW.....6	do	
	7 p. m.	30	.35	NW..... 4	Cloudy	
Do.....	27, 7 a. m.	27	.50	N. by W....2	....do	
	m.	29	.49	NNW.....4	Overcast ..	
	7 p. m.	28	.45	N.....5	... do	Snow began 1 p. m.
Do.....	28, 7 a. m.	25	.41	NNW..... 3	Cloudy	
	m.	28	.34	NW. by N. .3	Overcast....	
	7 p. m.	26	.46	NW.....4	....do	
Do.....	29, 7 a. m.	26	.56	W..... 2	Cloudy	
	m.	32	.58	SW.....2	....do	
	7 p. m.	30	.60	SW.....2	... do	
Do.....	30, 7 a. m.	32	.52	S 3	Overcast....	
	m.	32	.49	SSE 2	....do	
	7 p. m.	33	.46	NNE 1	... do	
Do.....	Oct. 1, 6 a. m.	32	.48	S. by E 1	Fog	9 a. m. fog cleared.
	m.	36	.44	SE.... 2	Few clouds	Beautiful weather.
	6 p. m.	34	.44	SSE.....2	Overcast...	4 p. m. began to cloud up.
Do.....	2, 6 a. m.	32	.47	S 2	Fog	Rain during night.
	m.	32	.51	NW..... 4	Rain.....	Rain began at 9 a. m., ceased at [2 p. m.
	6 p. m.	30	.61	N. by W... 4	Overcast....	
Do.....	3, 6 a. m.	22	.64	NW 1	Cloudy	Hazy.
	m.	26	.55	NNE 1	Few clouds .	
	6 p. m.	24	.50	S. by W.... 1	Overcast ..	
Do.....	4, 6 a. m.	24	.44	SW 2	.. do	Spitting snow.
	m.	30	.45	SW... 1	.. do	Spitting snow.
	6 p. m.	30	.44	SE... 2	... do	Spitting snow.
Do	5, 6 a. m.	29	.02	E 9	Heavy snow.	Gale with snow began at midnight.
	m.	29	28.76	NE 9	... do	
	6 p. m.	40?	.56	NNW.....10	....do	
Do	6, 6 a. m.	20	.90	WNW.....11	Snow-drift ..	
	m.	26	.90	NW.....9	...do	
	6 p. m.	26	29.02	NW.....8	... do	
Do.....	7, 6 a. m.	15	.20	NW.....9	... do	
	m.	15	.40	NW.....9	... do	
	6 p. m.	13	.50	NW.... 8	... do	Gale ceased at 7.
Do	8, 6 a. m.	12	.63	NW. 5	Few clouds	
	m.	10	.66	NW.....4	.. do	
	6 p. m.	6	.64	NW.....1	Clear	
Moved to 5th Enc't.	9, 6 a. m.	16	.56	ENE.....3	Overcast...	Ther. lowest in the night, 3°.
	m.	20	.61	NE.....3	Cloudy	
Lat. 64° 46'.3 N. Long. 87° 14' W.	6 p. m.	19	.58	N. by E.....4	Overcast...	At 7 p. m. fine rain. Ther. 16°.
Do .	10, 6 a. m.	17	.30	N. by E.....5	.. do	Heavy snow began at 6 a. m.
	m.	17	.20	N. by E.....7	.. do	Heavy snow.
	6 p. m.	16	.20	N.....8	.. do	Heavy snow.
Do.	11, 6 a. m.	16	.53	NNE 7	... do	Snow-drift.
	m.	11	.64	N.....5	Very cloudy.	
	6 p. m.	12	.75	N. by E ... 4	... do	

OCTOBER—NOVEMBER, 1864.

Locality.	Date.	Ther.	Aneroid Bar.	Wind.	Sky.	Remarks
	1864.	°	*In.*			
5th Enc't.	Oct. 12, 6 a. m.	5	29.96	N.....4	Cloudy.....	
Lat. 64° 46′.3 N.	m.	12	.98	N.....3	Overcast...	
Long. 87° 14′ W.	6 p. m.	13	.98	N. by E.....1	....do.....	
Do.....	13, 6 a. m.	26	30.00	SE.....1	... do.....	
	m.	30	.00	SE.....3	....do.....	Light snow between 9 and 10 a. m.
	6 p. m.	28	.02	SSE.....5	....do.....	Snow began at 2 p. m.
Do.....	14, 6 a. m.	27	29.99	SE.....5	....do.....	Snow.
	m.	30	.99	SE.....5	....do.....	Snow, less than ½ inch.
	6 p. m.	28	30.00	SSE.....6	....do.....	
Do.....	15, 6 a. m.	30	.02	SE.....6	....do.....	
	m.	32	.01	SSE.....5	....do.....	
	6 p. m.	31	.03	S. by E.....5	....do.....	
Do.....	16, 6 a. m.	9	.18	NE.....2	Few clouds.	Thick "frost-smoke" and "fog-eater" (fog-bow) this a m.
	m.	18	.21	N. by E.....2	... do.....	
	6 p. m.	2	.24	NNW.....1	....do.....	Aurora. "Frost-smoke" till 6 p. m.
Do.....	17, 6 a. m.	— 1	.24	SW.....2	....do.....	Same as morning of 16th.
	m.	12	.19	WSW.....1	....do.....	
	6 p. m.	2	.16	NNW.....2	.. do.....	Aurora.
Do.....	18, 6 a. m.	20	.22	N. by E.....4	Overcast..	Between 2 and 3 p. m. snow fell.
	m.	13	.20	N. by E.....6	Cloudy.....	The large thermometers stand this evening, one at 5°, the other at 6°, while two small ones stand at 11°. I must keep register of each separately.
	6 p. m.	16	.36	N.....6	Few clouds	Aurora.
Do.....	19, 6 a. m.	0	.26	SW.....2	Cloudy.....	
	m.	11	29.99	SW.....7	Overcast..	Snow began 9 a. m. and ended 5 [p. m.
	6 p. m.	18	.70	NNW.....6	... do.....	
Do.....	20, 6 a. m.	— 3	.90	NNW.....8	Cloudy.....	Snow-drift.
	m.	3	30.00	NNW.....8	...do.....	Snow-drift.
	6 p. m.	— 5	29.94	NNW.....5	Few clouds.	Aurora. Gale ended at 4 p. m.
Do.....	21, 6 a. m.	— 15	.76	N. by E.....3	...do.....	
	m.	— 6	.65	N.....3	Cloudy.....	
	6 p. m.	— 15	.62	N.....5	Few clouds.	Aurora.
Do.....	22, 6 a. m.	— 20	.60	N. by W..3	.. do.....	
Do.....	24, 6 p. m.	— 26	.90	NNW.....3	Cloudy.....	[No record.]
Do.....	25, 6 a. m.	— 16	30.36	N.....5	....do.....	
	m.	— 18	.47	N. by E.....3	Few clouds.	
	6 p. m.	— 21	.56	N.....2	Clear.....	Aurora not so fine as usual.
Do.....	26, 6 a. m.	— 21	.69	N.....2	Cloudy.....	
	m.	— 10	.66	N. by E.....4	do.....	
	6 p. m.	— 12	.60	N. by E.....3	Few clouds.	Aurora not so fine as usual.
Do.....	27, 6 a. m.	— 7	.52	N.....2	Cloudy.....	
	m.	— 1	.46	N. by E.....2	....do.....	
	6 p. m.	0	.42	N.....4	Overcast....	
Do.....	28, 6 a. m.	— 7	.45	NNE.....2	Cloudy.....	
	m.	— 2	.45	N. by W.....1	Few clouds.	1 p. m., sun-dogs.
	6 p. m.	— 10	.46	N. by W.....3	... do.....	Aurora.
Do.....	29, 6 a. m.	— 7	.46	N.....2	Overcast....	
	m.	0	.44	N.....3	Cloudy.....	Fog. "Fog-eater" (fog-bow) at m. and for some time p. m. Fog or frost-smoke nearly all day.
	6 p. m.	— 10	.42	NNW.....2	Clear.....	
Do.....	30, 6 a. m.	— 10	.32	N.....1	... do.....	
	m.	1	.32	Calm.....	....do.....	
	6 p. m.	— 14	.22	W.....1	Few clouds.	
Do.....	31, 6 a. m.	— 3	.06	SW.....3	Overcast....	
	m.	15	.00	S.....2	... do.....	
	6 p. m.	17	29.87	SW.....4	... do.....	
Do.....	Nov. 1, 7 a. m.	25	.40	S. by W.....6	....do.....	
	m.	28	.20	SW.....8	Snow.....	Snow-drift.
	7 p. m.	25	.18	WSW.....5	Few clouds	Aurora. Ther. lowest + 25°.
Do.....	2, 7 a. m.	10	.19	SW.....4	Cloudy.....	
	m.	11	.19	WSW.....5	... do.....	
	7 p. m.	— 1.5	.18	SW.....5	Few clouds.	
Do.....	3, 7 a. m.	— 10	.18	NW.....3	do.....	
	m.	— 15	.23	NW.....3	Overcast....	
	7 p. m.	— 31	.25	NW.....2	....do.....	Snow. Aurora.
Do.....	4, 7 a. m.	— 36	.36	NW.....1	....do.....	Snow and drift.
	m.	— 15	.30	N. by E.....3	Snow-drift..	
	7 p. m.	— 2	.23	NE.....4	Overcast...	
Do.....	5, 7 a. m.	2	.10	N. by W...8	Cloudy.....	Sun shining from 11 a. m. to 2 p. m. through flying drift and falling snow up and far out from land.
	m.	13	.10	N.....7	.. do.....	
	7 p. m.	7	.12	E.....1	Few clouds.	

NOVEMBER, 1864.

Locality.	Date.	Ther.	Aneroid Bar.	Wind.	Sky.	Remarks.
	1864.	°	*In.*			
5th Enc't.	Nov. 6, 7 a. m.	8	29.22	NNW.....6	Cloudy.....	Frost-smoke.
Lat. 64° 46′.3 N.	m.	18	.28	NW 3	Few clouds.	
Long. 87° 14′ W.	7 p. m.	5	.34	SW 3	Clear	
Do.....	7, 7 a. m.	— 9	.39	SSW.....6	....do	
	m.	— 3	.43	SW.....4	....do	
	7 p. m.	8½*	.34	WSW..... 4	....do	Aurora.
Do.....	8, 7 a. m.	— 8	.63	NW 3	Few clouds	
	m.	— 1.5	.70	NW 5	Clear	
	7 p. m.	—12	.87	NW 1	....do	Aurora.
Do.....	9, 7 a. m.	—24	.01	W 1	Few clouds	
	m.	— 6.5	.04	WNW.....1	Clear	
	7 p. m.	—25	.04	NW 1	....do	
Do.....	10, 7 a. m.	—25	30.02	W 1	Few clouds.	
	m.	—10	29.97	Calm	Cloudy	
	7 p. m.	—24	.85	N. by W....3	....do	
Do.....	11, 7 a. m.	—20	.89	N. by W .. 4	Few clouds.	
	m.	—11.5	.89	N.....6	Clear	Snow-drift.
	7 p. m.	—18.5	.95	N 5	....do	
Do.....	12, 7 a. m.	—22.5	30.09	NNW.....5	Few clouds.	
	m.	—19.5	.13	N. by W... 5	....do	
	7 p. m.	—22.5	.18	N.....4	... do	
Do.....	13, 7 a. m.	—29.5	.19	NNE 4	....do	
	m.	—16	.19	N..... 4	Cloudy	Frost-smoke.
	7 p. m.	—27	.19	N.....2	....do	Frost-smoke.
Do.....	14, 7 a. m.	—21.5	.20	N.....2	....do	Frost-smoke.
	m.	—14.5	.14	W 2	Overcast ...	
	7 p. m.	— 8	.12	W 2	....do	
Do.....	15, 7 a. m.	—15.5	.11	WNW.....1	Frost-smoke	
	m.	—11	.12	WSW.....2	Overcast ..	
	7 p. m.	— 2.5	.10	WSW.....2	... do	
Do.....	16, 7 a. m.	14.5	29.98	SE 6	. do	Misty.
	m.	20	.93	S. by E 3	....do	
	7 p. m.	20	.86	SE..... 6	... do	
6th Enc't one mile south of 5th Enc't.	17, 7 a. m.	18.75	.75	SE 7	....do	Snow.
	m.	14	.78	SE 6	....do	Snow.
Lat. 64° 45′.8 N.	7 p. m.	9	.84	NNE 2	....do	
Long. 87° 20′ W.						
Do.....	18, 7 a. m.	7	.79	N. by E 4	....do	
	m.	4	.78	N. by E 6	Cloudy ...	Snow.
	7 p. m.	—11.5	.83	N. by E 4	Clear	Aurora.
Do.....	† 19, 7 a. m.	— 8	.86	NNE 6	Overcast....	
	m.	—10	.92	NNE 8	Snow	Drift.

* No sign prefixed in Hall's MSS.

† For the first nineteen days of this month two records were kept, the second of which follows.

NOVEMBER, 1864, (2d Record. 7 Thermometers.)

Locality.	Date.	Thermometers. 0.	3.	4.	5.	6.	7.	Bar.	Wind.	Sky.	Remarks.
	1864.	°	°	°	°	°	°	*In.*			
5th Enc't.	Nov. 1, 9 a. m.	27	26.5	28	27	26	27	29.30	SW 7	Overcast....	
Lat. 64° 46'.3 N.	3 p. m.	27	28	29	26	26	25	.14	SW 8	... do	Snow and drift.
Long. 87° 14' W.	9 p. m.	26	27	27	26	25	26	.19	SW 5	Few clouds .	Aurora.
Do.....	2, 3 a. m.	20	20	20	19	18	19	.18	SW 5	....do	Aurora.
	9 a. m.	14	14	15	12	12	13	.20	SW 4	Cloudy	
	3 p. m.	7	10	10	10	6	7	.18	W. by S.... 6	....do	
	6 p. m.	8	8	8	8	5	6	....	.....	.....	
	9 p. m.	7	7	6	6	3	4	.15	W. by S 5	Overcast....	
Do	3, 7 a. m.	0	1	0	— 2	— 3	— 2	.18	NW 3	Cloudy	
	m.	— 2	— 3	— 2	....	— 7	— 6	.23	NW 3	....do	
	7 p. m.	—10	—10	—12	....	—15	—16	.25	NW 2	Few clouds	Clear overhead, and but a few clouds near the horizon, yet snowing; aurora.
Do.....	4, 7 a. m.	—12	—13	—14	—15	—18	—19	.36	NW 1	. do	Aurora.
	m.	0	— 1	— 2	— 2	— 5	— 4.5	.30	N. by E.... 3	Overcast ..	
	7 p. m.	4	6	6	5	4	4	.23	NE 4	...do	Light snow.
Do	5, 7 a. m.	6	6	8	8	6	6	.10	N. by W 8	....do	Snow.
	m.	14	18	18	18	16	17	.10	N 7	.....	Snow and drift. Sun shining from 11 a. m. to 2 p. m.
	7 p. m.	10	12	12	12	10	11	.10	E 1	Overcast ..	
Do.....	6, 7 a. m.	10	13	13	12	10	11	.22	NNW 6	Few clouds	
	m.	18	20	20	19	18	19	.28	NW 3	Cloudy	Much open water in Welcome; wide channel between floe and the land.
	7 p. m.	10	12	12	11	9	10	.34	SW 3	.. do	
Do.....	7, 7 a. m.	1	2	2	2	2	2.5	.39	SSW .. 6	....do	Frost-smoke.
	m.	5	7	7	6	4	6	.43	SW 4	Few clouds .	
	7 p. m.	0	2	1	0	— 2	— 2	.44	WSW 4	Clear	Aurora.
Do.....	8, 7 a. m.	0	2	2	1	— 2	— 2	.63	NW 3	....do	
	m.	4.5	6	7	6	3	5	.70	NW 5	....do	A splendid day.
	7 p. m.	— 2.5	0	— 1	— 2	— 4	— 3.5	.87	NW 1	... do	Aurora.
Do.....	9, 7 a. m.	— 9	— 7	— 8	— 9	—12	—11.5	30.01	W 1	Few clouds	A fine sunset; the horizon for 90° either side of the sun suffused in lurid-glowing light, while from the horizon up 10° the remaining 180° is of deep blue and purple.
	m.	3	4	4	4	1	3	.04	WNW 1	Clear	
	7 p. m.	—10	— 8	—11	—10	—13	—12.5	.04	NW 1	.. do	
Do.....	10, 7 a. m.	—10	— 8	—11	—10	—13	—13	.02	W 1	Few clouds .	The Welcome covered with ice.
	m.	0	1	1	1	— 2	0	29.97	Calm	Cloudy	Sun shining at times.
	7 p. m.	— 8.5	— 6.5	— 7.5	— 9	—12	—11	.85	N. by W 3	do	Halo about the moon.
Do.....	11, 7 a. m.	— 7	— 5	— 6	— 6.5	— 9	— 9	.89	N. by W 4	Few clouds .	
	m.	0	0	0	0	— 2.5	— 1.5	.89	N 6	Clear	Snow-drift.
	7 p. m.	— 6	— 4	— 5	— 5	— 8.5	— 8	.95	N 5	.. do . . .	
Do.....	12, 7 a. m.	— 9	— 7	— 8	— 8	—12	—11	30.09	NNW 5	Few clouds .	
	m.	— 5	— 5	— 5.5	— 5	— 8	— 6.5	.13	N. by W 5	....do	
	7 p. m.	— 9	— 7	— 8	— 8	—11	—11	.18	N 4	....do	Aurora; halo around the moon.
Do.....	13, 7 a. m.	—13	—11	—12	—12	—15.5	—15.5	.19	NNE 4	... do	
	m.	.....	.....	.....	.....	.....	.....	.19	N 4	Cloudy	Frost-smoke; deposit of ice-crystals.
	7 p. m.	—11	— 9	—10	—10.5	—12	—13.5	.19	N 2	... do	Frost-smoke.
Do.....	14, 7 a. m.	— 8	— 6	— 7	— 8	—11	—10	.20	N 2	....do	Frost-smoke.
	m.	— 2.5	— 1	— 2	— 2.5	— 2.5	— 2.5	.14	W 2	Overcast....	
	7 p. m.	1	2	2	1.5	— 1	0	.12	W 2	....do	

NOVEMBER, 1865, (2d Record as far as to November 19.)

Locality	Date.	Thermometers. 0.	3.	4.	5.	6.	7.	Bar.	Wind.	Sky.	Remarks.
	1864.	°	°	°	°	°	°	In.			
5th Encʻt.	Nov. 15, 7 a. m.	− 4	− 2.5	− 4	− 4	− 6	− 6	30.11	WNW 1	Overcast ...	Frost-smoke.
Lat. 64° 46′.3 N.	m.	0	1.5	1	1.5	− 2	− 1	.12	WSW 2	....do	
Long. 87° 14′ W.	7 p. m.	5	6	6	5	3	4.5	.10	WSW 2	....do	Snow at 5 p. m. for ½ hour.
Do. ...	16, 7 a. m.	16.5	18.5	18	17.5	15	16.5	29.98	SE 6	....do	Misty.
	m.	21	22.5	22.5	22	20	21.5	.93	S. by E 3	....do	
	7 p. m.	21	22	22	21.5	20	21.5	.86	SE 6	... do	
Do .	17, 7 a. m.	20	21.5	21.5	21	19	20.7	.75	SE 7	....do	Snow.
	m.	17	19.5	19	18	17	18.5	.78	SE 6	....do	Snow.
	7 p. m.	12	14	14	13	11	14	.84	NNE 2	....do	
Do ..	18, 7 a. m.	10	12.5	12	11	9	11	.79	N. by E 4	....do	
6th Encʻt.	m.	9	12	11.5	10	8	9.5	.78	N. by E 6	... do	Snow.
Lat. 64° 45′.8 N.	7 p. m.	− 2.5	0	− 1	− 1.5	− 4	− 3	.83	NNE 4	Clear	Aurora belt 2° wide, from horizon NW. to horizon
Long. 87° 20′ W.	19, 7 a. m.	0	2.5	2	2	− 1	0	.86	NNE 6	Overcast. .	[SE., through the zenith, continuing 5 minutes.
	m.	− 1	1.5	− 0.5	0	− 2	− 1	.92	NNE 8	.... do	Snow-drift and perhaps snow.
	7 p. m.	− 4.5	− 2	− 3	− 3	− 6	− 6	.99	N 7	....do	
Do ..	20, 7 a. m.	−12.5	−10	−11	−11	−14	−14	30.04	N. by W ... 6	Clear	Sun-dogs, for one hour, when sun rose.
	m.	− 7.5	− 4.5	− 6	− 6	− 9	− 8.5	.12	N 7	....do	When sun set, glorious sky opposite from horizon
	7 p. m.	− 7	− 5	− 6	− 6	− 9	− 9	.10	N. by W ... 4	Few clouds .	up 15°. Aurora like one on eve of the 18th.
Do	21, 7 a. m.	− 3	− 1	− 2	− 2	− 5	− 4	29.97	N. by W ... 3	Overcast	
	m.	− 5.5	− 3	− 4	− 4	− 7	− 6	.95	N. by W ... 3	Cloudy	
	7 p. m.	−14	−14	−13	−13	−16	−16	.94	NW. by N .. 3	Clear	Aurora belt similar to that of the 18th, with rays
Do .	22, 7 a. m.	.....	.....	.....	.....	.....	.....	.94	NNW 2	Few clouds .	[from W. to SE.
	m.	.....	.....	.....	.....	.....	.....	.94	NW 2	....do	
	7 p. m.	−16	−14	−15	−15	−19	−19	.93	NW 1	....do	Aurora.
Do .	23, 7 a. m.	.....	.....	.....	.....	.....	.....	.....	.....	.....	Hall sick.
	m.	.....	.....	.....	.....	.....	.....	.....	.....	.....	
	7 p. m.	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Do	24, 7 a. m.	− 2	0	− 1	− 1	− 4	− 3	.89	SW 1	Cloudy	Snow.
	m.	.....	.....	.....	.....	.....	.....	.....	.....	.....	
	7 p. m.	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Do	25, 7 a. m.	.....	.....	.....	.....	.....	.....	.....	.....	.....	Hall sick.
	m.	.....	.....	.....	.....	.....	.....	.....	.....	.....	
	7 p. m.	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Do..... .	26, 7 a. m.	.....	.....	.....	.....	.....	−26	.....	.....	.....	Observed by Too-koo-li-too.
	m.	.....	.....	.....	.....	.....	−27	.....	.....	.....	Observed by Too-koo-li-too.
	7 p. m.	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Do..... ...	27, 7 a. m.	.....	.....	.....	.....	.....	.....	.....	.....	.....	Hall sick.
	m.	.....	.....	.....	.....	.....	.....	.....	.....	.....	
	7 p. m.	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Do..... .	28, 7 a. m.	2	4	3	2.5	0.5	2	.55	E 6	Overcast....	
	m.	4	6	6	5	3	4	.58	E 6	....do	
	7 p. m.	− 1	2	1	1.5	− 2	− 1	.55	NE 6	Cloudy	
Do.....	29, 7 a. m.	−10	− 8	− 9	− 9.5	−12.5	−12	.60	NNE 6	....do	
	m.	−11	− 9	−10	−10	−14	−13	.63	N. by E .. 6	.. do	
	7 p. m.	−12	−10	−10.5	−10.5	−14	− 13.5	.62	N 6	Clear	
	11 p. m.	− 8	− 6	− 7	− 8	−10	− 9.5	.62	NNE 6	....do	Aurora.

Locality.	Date.	Thermometers. 0.	3.	4.	5.	6.	7.	Bar.	Wind.	Sky.	Remarks.
	1864.	°	°	°	°	°	°	*In.*			
6th Enc't.	Nov. 30, 7 a. m.	− 5	− 2	− 3.5	− 3.5	− 6	− 5	29.60	N. by E ... 6	Overcast ..	
Lat. 64° 45′ 8 N.	m.	0	2	1	0.5	− 2	− 1	.58	N. by E 6	... do	
Long. 87° 20′ W.	7 p. m.	1	3	3	2	0	1	.58	NNE 7	....do	Snow.
Do	Dec. 1, 7 a. m.	2	4	3.5	3	0	2	.58	N. by E 8	... do	Snow and drift.
	m.	3	5	4.5	4	2	3	.60	N. by E 8	... do	Snow and drift.
	7 p. m.	2	5	4	4	1	2.5	.65	N 8	... do	Snow and drift.
Do	2, 7 a. m.	− 4.5	− 2.5	− 3.5	− 4	− 6.5	− 5.5	.90	NNW 7	Cloudy	Drift.
	10 a. m.	− 8	− 6	− 6.5	− 7	−10	− 9	.90	NNW 8	.. do	Drift.
	m.	− 8	− 6	− 6.5	− 7	−10	− 9	.97	NNW 8	....do	Drift.
	7 p. m.	−14	−11	−12.5	−12.5	−16	−16	30.03	NNW 6	Few clouds .	Aurora.
Do.....	3, 10 a. m.	−17	−15	−16	−16	−20	−20	.10	NNW 6	....do	
	m.	−18.5	−16	−17.5	−17.5	−21	−21	.08	NNW 7	... do	Snow-drift; open water in the Welcome.
	7 p. m.	−21	−18	−20	−20	−24	−24	.07	NNW 6	.. do	Aurora.
Do	4, 10 a. m.	−14	−12	−12.5	−12.5	−16	−16	29.89	NNW 4	Cloudy.	
	m.	−14	−10.5	−12	−12	−16	−15	.84	NNW 4	.. do	New ice formed.
	7 p. m.	−17	−14.5	−16	−16	−20	−19.5	.75	W 1	....do	
Do.....	5, 10 a. m.	−17	−14.5	−14	−15	−19	−19	.73	NW 1	....do	
	m.	−14	−12	−12.5	−13	−16	−16	.70	N. by W ... 2	... do	At 2 p. m. the wind shifted to the SE. via the W.
	7 p. m.	−10.5	− 8	−10	−10	−13	−13	.75	SE 2	Few clouds	
Do.....	6, 10 a. m.	− 8	− 6	− 7	− 7	−10	−10	.84	SE 3	Cloudy	
	m.	−12	− 9	−10.5	−11	−14	−14	.87	SE 1	....do	
	7 p. m.	−17	−14.5	−16	−16	−19.5	−19	.90	N 1	... do	
Do.....	7, 10 a. m.	− 9	− 6.5	− 8	− 8	−11	−10.5	.94	E 5	Overcast...	Snow.
	m.	−15	−12	−14	−14	−17.5	−17	.90	N 2	... do	
	7 p. m.	−12.5	−10	−12	−11	−15	−14.5	.88	N. by E 6	....do	Hazy aurora; ring about the moon; radius from center of moon to inner part of circle, 21°.
Do.....	8, 10 a. m.	−17.5	−15	−16	−16	−20	−20	.85	N. by E 4	Cloudy	Aurora.
	m.	−18	−16	−16.5	−16.5	−20.5	−20.5	.86	N 6	... do	
	7 p. m.	−16	−13	−14.5	−14	−18	−18	.83	N... 7	....do	
Do.....	9, 10 a. m.	−21.5	−18	−20	−20	−24	−24	.90	N 7	....do	Aurora in patches from NW. to SE.
	m.	−21.5	−18.5	−20	−20	−24	−24.5	.92	N 7	... do	
	7 p. m.	−20.5	−17.5	−19	−19	−23	−23.5	30.00	N 6	....do	Hazy.
Do.....	10, 7 a. m.	−27	−24.5	−26	−26.5	−30	−32	.10	Calm	Few clouds .	
	11 a. m.	−28	−25.5	−27	−28	−32	−33	.10	Calm	....do	
	m.	−28	−25.5	−27	−28	−32	−33	.12	Calm	... do	
	7 p. m.	−32	−29	−30	−30.5	−34.5	−36	.12	SW 3	Clear	Aurora at 4 p. m.
Do	11, 7 a. m.	−35	−32	−34	−34	−38	−40	30.07	NNW 3	Few clouds .	Mercury exposed but not frozen. Lowest temperature last night by self-registering ther's: 0, −37°; 3, −35°; 4, −36°.5; 5, −37°; 6, −40°.5.
	m.	−32	−30	−31	−31	−35	36.5	.00	NNW 4	....do	
	7 p. m.	−30	−27	−29	−29	−33	−34	29.90	NNW 7	....do	Aurora.
Do	12, 7 a. m.	−24.5	−22	−23	−23	−27	−28	.74	NNW 7	... do	
	m.	−22.5	−20	−21.5	−21	−25	−25.3	.66	NNW 8	Overcast....	Snow.
	7 p. m.	−21	−18	−19.5	−19.5	−23.3	−23.7	.55	NNW 8	.. do	Snow.
Do	13, 7 a. m.	−27	−24.5	−26	26	−30	31	.46	NNW 5	Cloudy	
	m.	−29.7	−27	−28.5	−28.5	−32.5	−34	.38	N. by W... 4	... do	
	7 p. m.	−35.7	−33	−35	−34.5	−39	−41	.34	NNW 2	Few clouds .	

DECEMBER, 1864.

Locality.	Date.	Thermometers. 0.	3.	4.	5.	6.	7.	Bar.	Wind.	Sky.	Remarks.
	1864.	°	°	°	°	°	°	*In.*			
6th Encᵗ. Lat. 64° 45′.8 N. Long. 87° 20′ W.	Dec. 14, 7 a. m.	−35	−33	−34.5	−34.5	−38.5	−40.5	29.30	NNW 2	Few clouds .	Self-registering ther's last night: 0, −40°; 3, −37°; 4, −39°; 5, −40°; 6, −44°.
	m.	−34	−31	−33	−32	−36	−38	.33	N. by W.... 2	....do	Frost-smoke during the day.
	7 p. m.	−35	−32.3	−34	−34	−38	−40	.36	N. by E.... 3	Clear	Aurora.
Do ...	15, 7 a. m.	−30.5	−28	−30	−30	−34	−35.5	.39	N.....3	Few clouds .	Self-registering ther's last night: 0, −35°; 3, −33°; 4, −34°; 5, −34°; 6, −38°.
	m.	−30	−27	−29	−28	−33	−34	.33	N. by E.... 2	... do	
	7 p. m.	−29.5	−27	−28	−28	−32.5	−34	.26	NNW 4	....do	Aurora at 4 p. m. Perpendicular rays in patches SE. and NW.
Do . .	16, 7 a. m.	−21.5	−19	−20	−20	−24	−24	.22	N..... 7	Overcast...	Snow. Lowest last night, −29°.5, by ther. No. 0.
	m.	−20.5	−18	19.5	−19	−23	−23	.23	N..... 8	....do	Drift.
	7 p. m.	−19	−17	−18	−18	−22	−22	.31	NNW 7	Few clouds	Drift.
Do	17, 7 a. m.	−19.5	−17	−18	−18	−22	−22	.37	NW. by N. 5	Cloudy	Lowest last night, −21°, by ther. No. 0.
	m.	−23	−20.5	−22	−22	−26	−27	.35	NW. by N. 1	do.	
	7 p. m.	−27	−24	−26	−26	−30	−31	.40	NW. by N..1	Few clouds .	Aurora.
Do . .	18, 7 a. m.	−27	−24.5	−26	−26	−30	−31	.54	Calm	Clear	Lowest last night, −29°, by No. 0 ther.
	m.	−26	−24	−25	−25	−28.5	−29.5	.58	NNW 4	Few clouds	
	7 p. m.	−28	−25.5	−27	−27	−31	−32	.64	NNW 3	Clear	Aurora from SE. to W. an unbroken belt 10° above horizon, rays vertical and brisk.
Do	19, 7 a. m.	−24	−22	−23	−23	−27	−28	.65	N 6	Cloudy ...	
	m.	−25	−22	−24	−24	−27.5	−28	.70	N. by E ... 6	....do	
	7 p. m.	−26	−23	−24	−24	−28	−29	.73	N. by W .. 6	Clear	
Do	20, 7 a. m.	−24	−22	−23	−23	−26.5	−27.5	.86	NW..... 4	Cloudy	Lowest last night, −26°, by No. 0 ther.
	m.	−18	−16	−17	16.5	−20	−20	.88	NNW 6	... do	Open water in the Welcome.
	7 p. m.	−24	−21	−22.5	−22.5	−26.5	−27	.95	NNW 6	Few clouds .	Aurora.
Do	21, 7 a. m.	−23	−20	−22	−22	−26	−26.5	.97	SW..... 2	Cloudy	Lowest last night, −24°, by No. 0 ther.
	m.	−15	−13	−14	−14	−17.5	−17	.91	SW 3	Overcast....	Snow.
	7 p. m.	−21	−18.5	−20.5	−20.5	−25	−25	.94	NW 2	Clear	Aurora.
Do	22, 7 a. m.	−14.5	−12	−13.5	−13.5	−17	−16.5	.90	NW 1	Cloudy	
	m.	−13	10	−11.5	−11.5	−15	−14.5	.86	N..... .. 1	Overcast....	
	7 p. m.	−12	− 9	−10	−10.5	−14	−13	.80	NE 5	Cloudy	Aurora.
Do..... ..	23, 7 a. m.	−22.5	−19.5	−21	−21	−25	−25.5	.65	N.....3	Few clouds .	
	m.	−22	−20	−21	−21	−24	−25	.54	NNW 6	Clear	
	7 p. m.	−21	−19	−20	−20	−24	−25	.40	NW 5	Few clouds .	Aurora.
Do.....	24, 7 a. m.	−20	−18	−20	−20	−24	−24	.32	N.....6	... do	
	m.	−20	−18	−20	−19	−23.5	−24	.35	N.....1	do	
	7 p. m.	−20	−17	−19	−19	−22.5	−23	.38	NW 4	Clear	Aurora.
Do.....	25, 7 a. m.	−26	−23	−24.5	−24.5	−29	−29.5	.36	NW 4	... do	Aurora.
	m.	−23.5	−21	−22.5	−22.5	−26	−26.5	.34	N.....6	....do	
	7 p. m.	−23	−20.5	−22.5	22.5	−26	−27	.40	N. by E 6	... do	Aurora.
Do.....	26, 7 a. m.	−23	−20.5	−22	−22	−26	−26.5	.54	N. by W .. 4	Few clouds .	
	m.	.....	.....	.....	.....	.....	−25	.60	N 4	....do	Observation made by Too-koo-li-too.
	7 p. m.	−23	−20	−22	−22	−26	−26	.65	NNW 5	Clear	Aurora; a belt from SE. horizon over zenith to within 40° of NNW.
Do.....	27, 7 a. m.	−24.5	−22	−23.5	−23.5	−28	−28	.83	NNW 2	Few clouds .	
	m.	−20.5	−18.5	−20	−20	−23	−23	.85	NNW 3	....do	
	7 p. m.	−24	−22	−23	−23	−27	−28	.90	NW 4	Clear	Aurora.

Locality.	Date.		Thermometers. 0.	3.	4.	5.	6.	7.	Bar.	Wind.	Sky.	Remarks.
	1864.		°	°	°	°	°	°	*In.*			
6th Enc't.	Dec. 28,	7 a. m.	−29.3	−26.5	−28.5	−28.5	−33	−34	29.95	W 1	Clear	Aurora. Lowest this morn, −30°, by ther. No. 0.
Lat. 4° 45′.8 N.		m.	−27	−25.5	−27	−27	−30.5	−31.5	.94	SW 1	Few clouds .	
Long. 87° 20′ W.		7 p. m.	−22	−20	−21	−21	−25	−25	.90	SW 1	....do	Aurora.
Do.....	29,	7 a. m.	−24	−22	−23	−23	−27	−27.5	.94	N. by W . 2	....do	No. 0 ther. lowest last night, −26°.
		m.	−17.5	−16	−16	−16	−20	−20	.94	N 2	Cloudy	
		7 p. m.	−11	− 7	− 8	− 8	−11	−11	.94	N. by W .. 2	Overcast....	
Do	30,	7 a. m.	− 7	− 5	− 6	− 6	− 9.5	− 8.5	.88	N. by W .. 3	Cloudy	
		m.	− 6	− 3.5	− 4	− 4	− 8	− 7	.82	NNW 5	.. do	
		7 p. m.	−12.5	−10	−11.5	−11.5	−15	−15	.65	NNW 4	....do	Aurora.
Do	31,	7 a. m.	−11	− 9	−10	−10	−14	−13	.41	NNW 1	....do	No. 0 ther. lowest last night, −16°.
		m.	−18	−16	−17	−17	−20.5	−21	.39	NW 1	Few clouds .	
		7 p. m.	−18	−16	−17.5	−17.5	−21	−21.5	.40	NW	....do	Aurora.
	1865.											
Do.....	Jan.	1, 7 a. m.	−20	−18	−19	−19	−23.5	−23.5	.55	NW. by N ..7	Few clouds .	By 9 p. m. last night wind from NW. had increased to a moderate gale and so continued through the night.
		m.	−18.5	−16	−18	−18	−21.5	−21.5	.62	NW. by N ..8	....do	Open water in the Welcome.
		7 p. m.	−21	−18.5	−20	−20	−24	−24	.72	NW. by N ..4	Clear	Aurora SE. to NW.; two shooting stars in NW.
Do.....	2,	7 a. m.	−28	−25	−27	−27	−31	−39	.83	NNW 5	....do	
		m.	−26	−24	−25	−25	−29	−29.5	.87	NNW 6	....do	Snow-drift; open water within one mile.
		7 p. m.	−34	−31	−33.5	−33.5	−37.5	−39	.78	N. by W 4	....do	Aurora.
Do.....	3,	7 a. m.	−31	−29	−30	−30	−34.5	−35.5	.60	NW 8	Overcast....	Snow-drift; perhaps snow.
		m.	−33.5	−30.5	−32.5	−32.5	−36.5	−38	.62	WNW 8	....do	Snow-drift; perhaps snow.
		7 p. m.	−34	−32	−34	−34	−38	−39.5	.66	N. by W 6	Misty	Snow-drift; perhaps snow.
Do.....	4,	7 a. m.	−38	−35.3	−37.5	−37.5	−42	−45 ?	.79	NW 2	....do	Frost-smoke; No. 7 ther. marked only to −44°.
		m.	−36	−34.5	−36	−36	−40	−42	.81	NW 2	....do	Frost-smoke.
		7 p. m.	−38.5	−36.5	−38	−38	−42.5	.....	.86	SW 1	Few clouds .	Aurora.
Do.....	5,	7 a. m.	−35	−33	−34.5	−34.5	−39	−40.5	.88	N. by W 2	Clear	Lowest last night, −39°, by ther. No. 0.
		m.	−28	−26	−28	−28	−32	−32.5	.80	NW 2	Overcast....	
		7 p. m.	−25	−22.5	−24	−24	−28	−29	.76	NW 1	Misty	Halo about the moon.
Do.....	6,	7 a. m.	−26	−24	−25.5	−25.5	−29.5	−30.3	.69	N 3	Overcast....	
		m.	−26	−24	−25	−25	−29	−30	.69	ENE 3	Misty	Frost-smoke.
		7 p. m.	−33.5	−32	−34	−34	−38	−40	.82	N 7	.. do	Aurora.
Do.....	7,	7 a. m.	−36.5	−34.5	−36	−36	−40	−43	30.06	N. by E 4	....do	Aurora. Lowest last night, −37°, by ther. No. 0.
		m.	−37	−34.5	−36	−36	−40	−42	.06	N 2	Few clouds .	
		7 p. m.	−40	−38	−40	−40	−44	.....	.04	NNW 4	Clear	Aurora; a very fine display.
Do.....	8,	7 a. m.	−40.5	−38.5	−40.5	−40.5	−45	.....	.00	N. by W 2	Misty. . .	Mercury frozen.
		m.	−37.5	−36	−38	−38	−42	.....	29.96	N. by W ... 4	Frost-smoke	
		7 p. m.	−37.5	−35.5	−37.5	−37.5	−42	.....	.95	NW 4	Few clouds .	
On sledge journey to Depot Island.	9,	7 a. m.	−38	−36	−38	−38	−42.3	.....	.90	NW 2	....do	Aurora; an arch SW. to NE. over zenith.
		m.	−36	...	.....	.....	.....	.....	.....	NW 2	....do	
		7 p. m.	−41	.....	.....	.....	.....	.....	.....	NW 3	....do	
Do	10,	7 a. m.	−37	.....	.....	.....	.....	.....	.....	NW 2	....do	
		m.	−34	.....	.....	.....	.....	.....	.....	NW 1	....do	
		7 p. m.	−40	.....	.....	.....	.....	.....	.....	Calm	Clear	

JANUARY, 1865.

Locality.	Date.	Thermometers. 0.	3.	4.	5.	6.	7.	Bar.	Wind.	Sky.	Remarks.
	1865.	°	°	°	°	°	°	*In.*			
On sledge journey to Depot Island.	Jan. 11, 7 a. m.	−33							NNE 8	Cloudy	Snow drift.
	m.	−32							NNE 8	do	Snow-drift.
	7 p. m.	−38							NNE 7	do	Snow-drift.
Do	12, 7 a. m.	−36							NNW 3	Few clouds	Aurora.
	m.	−38							NNW 3	do	
	7 p. m.	−36							N 2	do	Aurora.
Do	13, 7 a. m.	−34							W 5	do	
	m.	−27		Mercu'l					W 2	do	
*On bark Monticello, lat 63° 47′ N., long. 89° 51′ W.	7 p. m.	−28		ther. on					SW 4		Snow.
	14, 7 a. m.	−33		Monti-					NW 5		
	m.	−28		cello.					NW 5		
	7 p. m.	−28							NW 4		
Do	15, 7 a. m.	−37		−44					2	Few clouds	
	m.	−36		−43					4	Clear	
	7 p. m.	−38		−45					4	do	
Do	16, 7 a. m.	−37		−44						Few clouds	
	m.	−34		−42						do	[Wind direction blanks in Hall's MSS.]
	7 p. m.	−36		−43						do	
Do	17, 7 a. m.	−30		−37					4		
	m.	−24		−30					4		
	7 p. m.	−22		−26					5		
Do	18, 7 a. m.	−13		−17					NW 3	Few clouds	
	m.	−14		−18					NW 2	do	
	7 p. m.	−11		−15					NW 3	Cloudy	
Do	19, 7 a. m.	−21		−27					NNE 2	Few clouds	
	m.	−19		−24					NW 2	do	
	7 p. m.	−21		−26					NW 1	do	
Do	20, 7 a. m.	−21		−26					NNE 2	Overcast	
	m.	−14		−18					NNE 3	Cloudy	
	7 p. m.	−20		−25					NNE 2	do	
Do	21, 7 a. m.	−22		−28					NNW 3		
	m.										
	7 p. m.										
Do	22, 7 a. m.	−22		−28							
	m.	−21		−27							
	7 p. m.	−17		−22					NE 7	Few clouds	
Do	23, 7 a. m.	−10		−14					NE 8	Cloudy	Snow-drift.
	m.	−10		−14					NE 8	do	Snow-drift.
	7 p. m.	−12		−16					NE 6	Few clouds	Snow-drift.
Do	24, 7 a. m.	−17		−20.5					N. by E 6	Overcast	Snow-drift.
	m.	−10		−14					N. by E 7	do	Snow-drift.
	7 p. m.	− 8		−12					N. by E 7	Cloudy	Snow-drift.
Do	25, 7 a. m.	− 8		−12					N. by E 7	Few clouds	
	m.	− 8		−12					N. by E 7	do	
	7 p. m.	− 3		− 5					NE 8	Overcast	Aurora.

Locality.	Date.	Thermometers. 0.	3.	Mercu'l ther. on Monticello.	5.	6.	7.	Bar.	Wind.	Sky.	Remarks.
	1865.	°	°	°	°	°	°	*In.*			
On bark Monticello.	Jan. 26, 7 a. m.	− 2	.....	− 4	.....	.....	.....	.....	NNE 7	Few clouds .	
	m.	− 4	.....	− 6	.....	.....	.....	.....	NNE 3	....do	
Lat. 63° 47′ N.	7 p. m.	−10	.....	−14	.....	.....	.....	.....	NNE 2	Clear	
Long. 89° 51′ W.	27, 7 a. m.	−14	.....	−20	.....	.....	.....	.....	NW 1	Few clouds .	
	m.	− 3	.....	− 5	.....	.....	.....	.....	Calm	Cloudy	
	7 p. m.	− 6	.....	−10	.....	.....	.....	.....	Calm	Few clouds .	
Do	28, 7 a. m.	−12	.....	−16	.....	.....	.....	.....	W 4	Cloudy	
	m.	−16	.....	−20	.....	.....	.....	.....	W. by N 5	Clear	
	7 p. m.	−20	.....	−24	.....	.....	.....	.....	W. by N 3	Cloudy	
Do..... ..	29, 7 a. m.	−16	.....	−20	.....	.....	.....	.....	W 2	Overcast....	Snow.
	m.	.....	.....	.....	.....	.....	.....	.....	.....	.....	
	7 p. m.	−24	.....	−30	.....	.....	.....	.....	.....	.....	
Do	30, 7 a. m.	−28	.....	−34	.....	.....	.....	.....	NW 3	Few clouds .	Aurora.
	m.	−26	.....	−32	.....	.....	.....	.....	NW 2	....do	
	7 p. m.	−28	.....	−35	.....	.....	.....	.....	WNW 3	... do	Aurora.
Do.....	31, 7 a. m.	−33	.....	−40	.....	.....	.....	.....	NW 2	Clear	Aurora.
	m.	−24	.....	−30	.....	.....	.....	.....	NW 2	Few clouds .	
	7 p. m.	−24	.....	−30	.....	.....	.....	.....	NW 2	....do	
Do.....	Feb. 1, 7 a. m.	−33	.....	−40	.....	.....	.....	.....	WSW 1	....do	Aurora.
	m.	−28	.....	−34	.....	.....	.....	.....	NW 1	. ..do	
	7 p. m.	−27	.....	−33	.....	.....	.....	.....	N 3	....do	
Do.....	2, 7 a. m.	− 7.5	.....	−10	.....	.....	.....	.....	ESE 8	... .	Snow.
	m.	− 3	.....	− 5	.....	.....	.....	.....	E 8	.....	Snow.
	7 p. m.	− 2	.....	− 5	.....	.....	.....	.....	E 8	Cloudy	Snow.
Do	3, 7 a. m.	1	.....	2	.....	.....	.....	.....	SE 8	Overcast....	Snow-drift.
	m.	1	.....	2	.....	.....	.....	.....	SE 8	....do	Snow-drift.
	7 p. m.	1	.....	2	.....	.....	.....	.....	SE 6	....do	Snow-drift.
Do	4, 7 a. m.	−20	.....	−26	.....	.....	.....	.....	W 4	Few clouds .	
	m.	−18	.....	−23	.....	.....	.....	.....	W 5	... do	
	7 p. m.	−26	.....	−34	.....	.....	.....	.....	W 6	Clear	Aurora.
Do.....	5, 7 a. m.	−30	.....	−36	.....	.....	.....	.....	W 2	Few clouds .	
	m.	− 24	.....	−30	.....	.....	.....	.....	W 3	....do	
	7 p. m.	−26	.....	−32	.....	.....	.....	.....	W 2	Cloudy	
Do.....	6, 7 a. m.	−12	.....	−16	.....	.....	.....	.....	SE 2	Overcast....	Snow.
	m.	− 9	.....	−12	.....	.....	.....	.....	SE 3	... do	Snow.
	7 p. m.	− 9	.....	−12	.....	.....	.....	.....	SE 2	Cloudy	
Do.....	7, 7 a. m.	−28	.....	−34	.....	.....	.....	.....	NW 5	Few clouds .	
	m.	−20	.....	−25	.....	.....	.....	.....	NW 5	....do	
	7 p. m.	−20	.....	−24	.....	.....	.....	.....	NW 2	Overcast ...	
Do.....	8, 7 a. m.	−26	.....	−32	.....	.....	.....	.....	NW 3	Few clouds .	
	m.	−22	.....	−28	.....	.....	.....	.....	NNE 1	... do	
	7 p. m.	−21	.....	−26	.....	.....	.....	.....	ENE 1	Cloudy	

FEBRUARY, 1865.

Locality.	Date.	Thermometers. 0.	3.	Mercu'l ther. on Monticello.	5.	6.	7.	Bar.	Wind.	Sky.	Remarks.
	1865.	°	°	°	°	°	°	*In.*			
On bark Monticello.	Feb. 9, 7 a. m.	−21	.....	−27	.....	.....	.....	.....	NNE 7	Cloudy	
	m.	−20	.....	−26	.....	.....	.....	.....	N 2	Few clouds .	
Lat. 63° 47′ N.	7 p. m.	−26	.....	−33	.....	.....	.....	.....	W. by N 4	....do	
Long. 89° 51′ W.	10, 7 a. m.	−13	....	−17	.....	.....	.....	.....	W 7	Cloudy	Leave ship for winter quarters.
Sledge journey to 6th Encampment.	m.	−18	....	.....	.....	.....	.....	.....	NNW 4	....do	
	7 p. m.	−20	.....	.....	.....	.....	.....	.....	NW 3	....do	
	11, 7 a. m.	−22	.....	.....	.....	.....	.....	.....	N 2	Few clouds .	
	m.	−20	.....	.....	.....	.....	.....	.....	N 3	....do	
	7 p. m.	− 6	.....	.....	.....	.....	.....	.....	SE 6	Overcast ...	
Do	12, 7 a. m.	2	.....	.....	.....	.....	.....	.....	E 3	.....	Snow.
	m.	0	.....	.....	.....	.....	.....	.....	NE 8	.....	Snow.
	7 p. m.	−10	.....	.....	.....	.....	.....	.....	NE 9	.....	Snow-drift.
Do	13, 7 a. m.	−23	.....	.....	.....	.....	.....	.....	N 3	Clear	
	m.	−15	.....	.....	.....	.....	.....	.....	NNW 4	....do	
	7 p. m.	−22	.....	.....	.....	.....	.....	.....	NW 1	Few clouds .	
Do	14, 7 a. m.	− 5	.....	.....	.....	.....	.....	.....	SW 5	Cloudy .	
Arrive at Nooswook 3.10 p. m.; 6th Encampment.	m.	0	.....	.....	.....	.....	.....	.....	S 3	Few clouds .	
				4.							[31.19 inches.
	7 p. m.	− 8	.....	.....	.....	.....	.....	.....	SSE 3	....do	Aurora; bar. found on return, at 3.30 p. m., to be
Do	15, 7 a. m.	−16	−14	−16	−16	−19	−18	31.00	N. by E.....2	Clear	
	m.	−10	− 8	− 9	− 8.5	−12	−10	30.90	N 2	Few clouds .	
	7 p. m.	0	2	0	0	− 2	− 1	.64	NNE 11	Snow	Storm from 4 p. m. to 5 a. m.
Do	16, 7 a. m.	12	14	13	12	10	13.5	.52	NNE 4	Cloudy	
	m.	18	19	18	17	15.5	17	.54	NE 7	... do	Snow.
	7 p. m.	10	11.5	10	10	8	9.5	.54	NE 7	Overcast ...	Snow.
Do	17, 7 a. m.	− 6	− 4	− 5.5	− 5.5	− 8	− 7.5	.67	N. by E. .. 5	Few clouds .	Frost-smoke.
	m.	2	3	2	2	0	2	.69	N. by E.... 3	Clear	9 a. m. to 10.30 a. m. rainbows on each side of sun.
	7 p. m.	− 8	− 6	− 8	− 8	−11	−10	.74	N. by E ... 4	....do	Aurora; earthquake.
Do	18, 7 a. m.	−11	−12	−10.5	−10.5	−12	−11	.78	N. by E 6	Few clouds	
	m.	0	1	0	0	− 2	− 1	.77	NNE 6	... do	Welcome covered with ice.
	7 p. m.	−11	−10	−12	−12	−15	−14	.72	NNW 3	Clear	Aurora.
Do	19, 7 a. m.	−14.5	−13	−14	−14	−18	−17.5	.68	N. by E ... 1	.. do	Channel of water ½ mile wide along coast.
	m.	8	7.5	5	5	3	5.5	.64	NW 1	.. do	
	7 p. m.	−14.5	−12.5	−14	−14	−18	−17	.52	NW 2	.. do	Aurora.
Do	20, 7 a. m.	−13	−12	−13	−13	−16.5	−16	.34	NW 1	Cloudy	Lowest last night, −20°, by ther. No. 0.
	m.	− 1	2	0	0	− 2	− 2.5	.30	W 2	... do	
	7 p. m.	− 9	− 9	−10	−10	−13	−12.5	.23	WSW 4	Few clouds .	Aurora.
Do	21, 7 a. m.	− 2	0	− 2	− 2	− 4	− 3	.13	SW 1	Overcast ...	Snow.
	m.	− 3.5	− 0.5	− 3	− 3	− 6	− 5	.07	SW 2	Few clouds .	
	7 p. m.	−13	−12	−14	−13	−13	−16	.10	NNW 3	Clear	Aurora.

Locality.	Date.	Thermometers. 0.	3.	4.	5.	6.	7.	Bar.	Wind.	Sky.	Remarks.
	1865.	°	°	°	°	°	°	*In.*			
6th Enc't.	Feb. 22, 7 a. m.	—16	—15	—16. 5	—16	—19. 5	—20	29. 90	NNW 6	Few clouds .	Snow-drift.
Lat. 64° 45′.8 N.	m.	— 8	— 7	— 8. 5	— 8. 5	—11	—10	.84	N.....7	....do	Snow-drift.
Long. 87° 20′ W.	7 p. m.	—17	—15	—16. 5	—16	—20	—20	.70	N. by W 3	....do	Aurora.
Do.....	23, 7 a. m.	—20	—18	—20	—20	—24	—24	.58	NNW 6	... do	
	m.	—11	—10	—11	—11	—14	—12	.50	NW 5	....do	
	7 p. m.	—18	—16	—17. 5	—17	—21	—21	.46	NW 2	... do	Aurora.
Do.....	24, 7 a. m.	—16. 5	—15	—16. 5	—16	—20	—19. 5	.49	N.....2	Cloudy	Lowest last night, —20°, by No. 0 ther.: 9 a. m., sun-dogs.
	m.	— 6	— 5	— 6	— 6	— 9. 5	— 7	.53	NNW 4	....do	
	7 p. m.	—20	—18	—20	—20	—23. 5	—23. 5	.63	NNW 7	Few clouds .	Aurora; snow-drift.
Do	25, 7 a. m.	—33. 5	—30. 5	—33	—33	—37	—38	.88	NNW 7	... do	Snow-drift.
	m.	—24. 5	—23	—25	—24	—28	—28	.94	N. by W 6	Frost-smoke	Snow-drift; thick frost-smoke over land a good part of the day.
	7 p. m.	—38	—36	—38. 5	—38	—42	.....	30. 00	NNW 3	Clear	Aurora.
Do.....	26, 7 a. m.	—46	—44	—46	—46	—50	....	29. 93	NNW 2	....do	Lowest last night: Ther's: 0, —48°; 3, —46°; 4, —48°; 5, —48°; 6, —52°.
	m.	—27	—26	—29. 5	—27. 5	—32	—33	.92	NNW 2	Few clouds .	Heavy fog-bank over open water in the Welcome, and thick vapor rising from it.
	7 p. m.	—36	—34	—36	—36	—40	—41	.89	NNW 4	Hazy	Snow.
Do.....	27, 7 a. m.	—36	—34	—36	—36	—40	—42	.95	NNW 5	Frost-smoke	Lowest last night: Ther's: 0, —39°; 4, —39°.
	m.	—26	—24	—26. 5	—26	—30	—31. 5	30. 02	N. by W ... 6	....do	Experiment with mercury repeated; result same as on the 26th.
	7 p. m.	—35	—33	—35. 5	—35	—39	—41	.10	NW. by N ..4	Hazy	
Do.....	28, 7 a. m.	—40	—38	—40	—40	—44	.....	.14	NW 5	Frost-smoke	
	m.	—26	—24	—26. 5	—26	—30	—32	.14	NW. by W..3	... do	
	7 p. m.	—44. 5	—42	—45. 5	—45	—49. 5	.....	.10	Calm	Clear	Aurora.

Locality.	Date.	Thermometers. 0.	3.	4.	5.	6.	7.	1.	2.	Condition of exposed mercury.	Remarks.
	1865	°	°	°	°	°	°	°	°		
6th Encampment.	Feb. 26, 8.00 a. m.	—38	—37. 5	—38. 5	—38. 5	—44	Bel'w sc'le marks.	Bel'w sc'le marks.	Bel'w sc'le marks.	Hard; frozen solid.	Globules of mercury remained fluid until their spherical shape was changed, when they immediately froze, and they then remained frozen after large masses had become fluid.
	8.30 a. m.	—37	—36	—38. 5	—38. 5	—44	... do ...	....do	... do	.. do ...	
	9.50 a. m.	—36	—34. 5	—38	—37. 5	—42	....do ...	....do ...	....do	Solid	
	10.10 a. m.	—35	—33. 7	—36	—35. 5	—40	—41	....do .	—80	... do ..	
	10.25 a. m.	—33. 5	—32	—34. 3	—34	—38	—39	.. do ..	.....	Yielding a little.	
	10.45 a. m.	—32	—30	—33	—33	—36	—37	—90	—73. 5	Semi-fluid	
	11.00 a. m.	—30	—29	—31. 7	—31	—35	—36	—86	—72	Nearly fluid; some hard.	

MARCH, 1865.

Locality.	Date.	Thermometers. 0.	3.	4.	5.	6.	7.	Bar.	Wind.	Sky.	Remarks.
	1865.	°	°	°	°	°	°	*In.*			
6th Enc't.	Mar. 1, 7 a. m.	—44	—42	—44	—44	—48	.....	30.14	SW 2	Few clouds	Mercury frozen. Fog-bank in the Welcome.
Lat. 64° 45'.8 N.	m.	—26.5	—25.5	—28	—28	—32.5	—26	.22	SW 4	....do	Lowest last night: Ther's: 0, —46°.5; 3, —45°; 4, —46°.5; 5, —46°.5.
Long. 87° 20' W.	7 p. m.	—38	—36	—38.5	—38	—42.5	Ther.	.27	SW 1	Clear	Mercury frozen.
Do	2, 7 a. m.	—39	—37	—38.5	—39	—43	taken	.34	NNW 2	Few clouds	Mercury frozen. Lowest last night, —41°, No. 0 ther.
	m.	—17	—17	—19.5	—19.5	—22	into	.36	N 2	....do	No. 0 ther. 9 a. m., —31°.
	7 p. m.	—37	—34.5	—37	—36.5	—40.5	the	.30	N. by W 3	Clear	Mercury frozen.
Do	3, 7 a. m.	—35	—33	—35	—34.5	—39	igloo.	.24	N. by W ... 6	Few clouds	Mercury frozen.
	m.	—22	—21	—22.5	—22.5	—27.5	.....	.32	N. by W 3	....do	
	7 p. m.	—33.5	—31	—33.5	—33	—37.5	.....	.32	NNW 4	Clear	Mercury frozen.
7th Enc't.	4, 7 a. m.	—33	—31	—33	—32.5	—37	.....	.43	N 5	Few clouds	Mercury frozen.
Lat. 64° 43'.2 N.	m.	—23	—22	—23.5	—23.5	—27	.....	.48	N 6	....do	
Long. 87° 20' W.	7 p. m.	—30	—28	—30	—30	—34	.....	.50	N 7	Hazy	Halo round moon.
100 fathoms	5, 7 a. m.	—28	—26	—28	—28	—32	.....	.46	N. by E 10	.....	Snow-drift.
south of 6th	m.	—25	—22.5	—23.5	—23	—28	.....	.40	NNE 11	.....	Snow-drift. Sun seen dimly through driving snow.
Enc't.	7 p. m.	—28	—26	—28	—28	—32	.....	.42	N. by E 11	.....	Snow-drift. Moon seen dimly through driving snow.
Do	6, 7 a. m.	—30	—28.5	—30.5	—30	—34	.....	.30	N 7	.....	Snow-drift.
	m.	—23.5	—20	—22	—21	—25	.....	.28	N 7	.....	Snow-drift. Halo around sun.
	7 p. m.	—32	—30	—32.5	—32	—36	.....	.22	NNW 5	Clear	
Do	7, 7 a. m.	—34	—33.5	—35.5	—35	—39	.....	.20	NNE 3	Few clouds	Mercury frozen; "shot"* mercury fluid. (*i.e.* Globules the size of shot.)
	m.	—19	—16	—16.5	—16	—20	.....	.20	NNE 3	... do	
	7 p. m.	—33.5	—32	—34	—33.5	—38	.....	.20	N. by W 4	Hazy	"Shot" mercury fluid.
Do	8, 7 a. m.	—35.5	—34	—36	—35.5	—40	.....	.27	N 3	Few clouds	Mercury frozen; "shot" mercury fluid.
	m.	.....	—10	.....	.....	.....	.....	.....	N 2	Clear	Observations made by Too-koo-li-too.
	7 p. m.	—32.5	—31	—33.5	—33	—37	.....	.30	N 1	Few clouds	
Do	9, 7 a. m.	—31.5	—31.5	—34	—33.5	—37.5	.....	.32	N. by E 3	Cloudy	Masses of mercury frozen; "shot" mercury fluid. No. 0 ther. lowest last night, —38°.
	m.	— 7.5	— 7	—13	—11	—16	.....	.30	NE 1	Few clouds	Ring round sun; mock sun under sun.
	7 p. m.	—19	—17	—18.5	—18	—22	.....	.22	ESE 4	Cloudy	Halo round moon.
Do	10, 7 a. m.	—19	—17.5	—19	—18.5	—22	.....	.22	E 3	Few clouds	
	m.	— 8	— 6	— 6	— 8	—12.5	.....	.15	NE 2	do	
	7 p. m.	—20.5	—18.5	—20.5	—20	—24	.....	29.92	N 7	Hazy	Ring round moon.
Do	11, 7 a. m.	—13?	—12?	—16	—16	—20	.....	.47	N 11	.....	Snow-drift. The ther. observations indifferent on account of the storm.
	m.	—11	— 9	—10	—10	—12	.....	.33	N 11	.....	Snow-drift.
	7 p. m.	—10	— 8	—10	—10	—13	.....	.27	NNW 10	.....	Snow-drift.
Do	12, 7 a. m.	—16	—14	—16	—16	—19	.....	.40	NNW 10	.....	Snow-drift.
	m.	—12	—10	—12	—12	—15	.....	.54	NW. by N ..7	Cloudy	Much open water in Welcome.
	7 p. m.	—22	—20	—22	—21	—24	.....	.66	NW 3	... do	
Do	13, 7 a. m.	—30	—26	—28.5	—28	—30	.....	.72	NW 4	Few clouds	
	m.	—17	—15	—18	—18	—19	.....	.74	NW 3	....do	
	7 p. m.	—29	—27	—29.5	—29	—33	.....	.82	SW 1	....do	
Do	14, 7 a. m.	—30	—28	—30	—29.5	—34	.....	30.01	WNW 1	....do	Sun-dogs; thick frost-smoke rising from Welcome.
	m.	—15	—12.5	—15.5	—16	—16	.....	.16	W 2	Clear	Lowest last night: Ther's: 0, —36°; 6, —40°.
	7 p. m.	—27	—25	—27	—26.5	—31	.....	.27	W 1	Few clouds	

Locality.	Date.	Thermometers. 0.	3.	4.	5.	6.	7.	Bar.	Wind.	Sky.	Remarks.
	1865.	°	°	°	°	°	°	*In.*			
7th Encᵗ, lat.	Mar. 15, 7 a. m.	—29	—27	—28	—28.5	—32	....	30.38	SW 3	Few clouds .	Ther's lowest last night: 0, —32°.5; 6, —36°.
64° 43′.2 N.;	m.	— 5.5	— 4	— 6.5	— 8	— 8.5	.....	.36	SW 2	Cloudy	
long. 87° 20′	7 p. m.	—14.5	—13	—14.5	—14	—17.5	.....	.33	SW 2	....do	
W.	16, 7 a. m.	— 7.5	— 6	— 7.5	— 7	—10	.....	.30	NE 3	....do	
	m.	10	.....	.....	.....	9	.....	.20	NE 3	....do	Made by Too-koo-li-too.
	7 p. m.	—12.5	—10.5	—12.5	—12	—15.5	.....	.14	NNE 2	Few clouds .	Sun-dogs each side of sun. Aurora 10 p m., S. and W.
Do.....	17, 7 a. m.	2	3	2	2	— 0.5	.....	.04	ENE 3	Overcast....	Snow.
	m.	10	12	11.5	10	10	.....	29.87	NNE 4	....do	Ther. in igloo 43°.
	7 p. m.	3	4.5	4.5	4	4	....	.76	NE 7	Hazy	
Do.....	18, 7 a. m.	— 1	0	0	0	— 3	.....	.64	NNE 7	Overcast....	Snow-drift.
	m.	5	6.5	6	5.5	4	.....	.58	NE 8	.....	Snow-drift; snow; ther. in igloo 45°.
	7 p. m.	— 0.5	1	0	0	— 3	.....	.54	N 10	.....	Snow-drift; snow.
Do.....	19, 7 a. m.	0.5	2	1	1	— 2	.....	.64	N 9	.....	Snow-drift.
	m.	10	11.5	10	10.3	8.5	.....	.70	N 3	Cloudy	
	7 p. m.	1	3	2	2	— 2	....	.80	NNW 5	.. do	Aurora.
Do.....	20, 7 a. m.	10	11	10	10	8.5	.....	30.00	N 2	Overcast...	
	m.	11	14	12	12	10.5	.....	.03	N 3	....do	
	7 p. m.	0.5	2	1.5	2	— 1.5	.....	.02	N. by E 2	Cloudy	
Do.....	21, 7 a. m.	10	11	10	10	7.5	.....	29.90	ESE 4	Overcast...	
	m.	21	.....	.....	.....	20	.....	.73	ESE 6	....do	Made by Too-koo-li-too.
	7 p. m.	13	15	14	14	12	.....	.64	E. by S 6	....do	Snow.
Do.....	22, 7 a. m.	13	14.5	14	13	11.5	.....	.90	SE 5	... do	Snow.
	m.	19	22	18	21.5	20	.....	.98	SSW 5	....do	Snow.
	7 p. m.	— 2	0	0	— 1	— 4	.....	30.22	S 1	... do	
Do.....	23, 7 a. m.	— 5.5	— 4	— 4.5	— 4.5	— 8	.....	.38	S 2	Cloudy	
	m.	14	16.5	16.5	20	21	.....	.40	W 1	....do	
	7 p. m.	2.5	4	3	2.5	0	.....	.42	NW 3	Misty	
Do.....	24, 7 a. m.	— 5	— 3	— 4.5	— 4	— 7	.....	.46	NW 7	Few clouds .	
	m.	4	7	5.5	5.5	3	.....	.51	NNW 7	... do	
	7 p. m.	— 6.5	— 4.5	— 6	— 5.5	— 9	....	.58	NNW 7	Clear	
Do.....	25, 7 a. m.	— 1.5	1.5	0	0.5	— 2	.....	.79	NNW 5	.. do	No. 0 ther. lowest last night, 10°.
	m.	8	11.5	10	10.5	8	.....	.70	NNW 3	Few clouds .	
	7 p. m.	— 8	— 6	— 8	— 7.5	—11	...	.62	NW 1	do	
Do.....	26, 7 a. m.	5	7	6.5	6	3.5	.....	.48	ESE 3	Cloudy	No. 0 ther. lowest last night, —9°.
	m.	20	23.5	23.5	22.5	21	.....	.33	SE 4	Overcast ...	Snow.
	7 p. m.	10	11.5	10.5	10	8	.....	.24	SE 2	.. do	Snow.
Do.....	27, 7 a. m.	11	11.5	12	11	9	.....	.18	Calm	....do	Snow; 2 in. snow fell last night.
	2 p. m.	32	33.5	34	31	32.5	.....	.22	WSW 2	Cloudy	Snow and ice melting in the shade.
	7 p. m.	4	5	4	4	2	....	.20	WNW 2	... do	
Do.....	28, 7 a. m.	12	15	14	12.5	12	.....	.08	E 4	Overcast....	Snow; No. 0 ther. lowest last night, 4°.
	m.	16	20	20	18	18	.....	29.88	ENE 7	do	Snow.
	7 p. m.	6	8.5	8	8	5.5	.....	.88	N 7	Few clouds	
Do.....	29, 7 a. m.	4	6.5	5.5	5	3	.....	.98	N. by W... 5	Cloudy . ..	No. 0 ther. lowest last night, —6°.
	m.	17	20.5	20	18	16.5	.....	.93	N. by E ... 6	Overcast....	Snow-drift.
	7 p. m.	— 1	2	0.5	0.5	— 2	.....	.92	N. by E 6	Cloudy	

APRIL, 1865.

Locality.	Date.	Thermometers. 0.	3.	4.	5.	6.	7.	9.	Bar.	Wind.	Sky.	Remarks.
	1865.			°		°	°	°	*In.*			
7th Encᵗ, lat.	Mar. 30, 7 a. m.	— 7.5	— 4	— 6	— 6	— 8.5	.....	.....	29.98	N.... 7	Cloudy	No. 0 ther. lowest last night, —10°.
64° 43.2 N.;	m.	3	7	6	4.5	2.5	.....	.....	.98	N. by E 7	Clear	
long. 87° 20′	7 p. m.	—12	— 9	—10.5	—10	—13.5	.....	.....	30.04	N. by W....4	....do	
W.	31. 7 a. m.	—14.5	—12	—13.5	—13	—16	.....	.....	.18	N. 3	Few clouds	No. 0 ther. lowest last night, —20°.
	m.	— 1	.	.....	.....	— 2	.....	.....	.18	N. by W....2	Cloudy	Made by Too-koo-li-too.
	7 p. m.	— 7.5	— 4.5	— 6	— 5.5	— 8.5	.....	.....	.18	NNW 3	Overcast....	
Do	Apr. 1. 6 a. m.	— 3	0	— 2	— 2	— 4.5	.....	.....	.18	N..... 2	.. do	Foggy; No. 0 ther. lowest last night, —10°.
	m.	19	20.5	22	22	19.5	15.5	21	.20	E 2	....do	
	3 p. m.	5	8	6	6.5	4.5	6	8	.23	ESE 3	... do	Snow, light.
	7 p. m.	1	3	2	2	— 1	0	2	.27	ESE 1	.. do	
Do	2. 6 a. m.	4	6	5.5	6	3	4	5	.29	E 2	Cloudy	No. 0 ther. lowest last night, —4°.
	m.	16.5	19	22	22	18	19	22	.30	NE 2	Overcast ...	Snow, light.
	3 p. m.	11	14	14	14	12	12	14	.30	NE 2	.. do	Snow, light.
	7 p. m.	0.5	3	2	2	— 0.5	1	2	.32	N.....3	....do	
Do	3. 6 a. m.	3	6	4.5	4	2	3.5	5	.37	NNW 5	do	No. 0 ther. lowest last night, — 1°.
	m.	4	6	6	6.5	2.5	3	6	.43	N..... . 7	Cloudy	Snow-drift; sun out occasionally.
	3 p. m.	2	4	4	5	0.5	2	6	.46	N. by E 4	. do	Sun out occasionally.
	7 p. m.	—10	— 7.5	—10	— 9.5	—12	—11	— 9	.50	NNW 3	Clear	
Do	4. 6 a. m.	—18	—15	—17	—16	—20	—20	—16	.73	NNW 8	.....	No. 0 ther. lowest last night, —21°; snow-drift; frost-smoke.
	m.	— 7	— 5	— 6	— 5.5	— 8.5	— 9	— 4.5	.80	NW 6	Few clouds	Snow-drift.
	3 p. m.	— 6	— 4	— 6	— 5	— 8	— 8	— 4	.83	NW 7	.. do	Snow-drift.
	7 p. m.	—13.5	—10.5	—13	—12.5	—15.5	—15	—12	.80	NW 7	do	Snow-drift.
Do	5. 6 a. m.	— 7.5	— 4.5	— 7	— 6	— 8.5	— 7.5	— 4.5	.67	SW 3	Overcast....	No. 0 ther. lowest last night, —17°.
	m.	11	15.5	10	15	13	16	16.5	.50	SE 4	....do	Snow.
	3 p. m.	4	6.5	4	5	2	4	6	.40	E. by S 4	.. do	Snow.
	7 p. m.	1	4	2	2	0	2	3	.32	SE 5	.. do	Snow.
Do..... ..	6. 6 a. m.	—10.5	— 8	—10	— 9.5	—12	—12	— 9	.30	NNE 10	Few clouds .	No. 0 ther. lowest last night, —12°; snow-drift.
	m.	— 9.5	— 7	— 9	— 8.5	—10	—11	— 6.5	.36	N 11	....do	Snow-drift. Sun shining all day.
	3 p. m.	—12	— 9.5	—10.5	—10	—12.5	—13	— 9	.33	N.....10	.. do	Snow-drift hugging the earth and extending up about 50 feet.
	7 p. m.	—21	—18.5	—21	—20	—24	—21	—20	.36	N. 9	....do	
Do	7, 6 a. m.	—23	—20	—22	—20	—24	—24	—20	.12	N.....10	....do	Snow-drift; No. 0 ther. lowest last night, —25°.
	m.	—12.5	—10	—11.5	—10.5	—13	—11	— 8	.03	N 10	....do	Snow-drift.
	3 p. m.	—13.5	—11.5	—13	—12	—15	—13.5	—11	.00	N 9	....do	Snow-drift.
	7 p. m.	—22	—19.5	—22	—21	—24.5	—24.5	—20	29.88	NNW 5	Clear	Snow-drift.
Do	8. 6 a. m.	—23	—20.5	—23.5	—22	—25.5	—25	—21.5	.68	NW 6	Cloudy	No. 0 ther. lowest last night, —25°.
	m.	— 6	.....	..	.....	.....	.....	.....	.63	NW 2	....do	Made by Too-koo-li-too.
	3 p. m.	— 7	— 3	— 5	— 4	— 6	— 3.5	— 3	.59	NNW 3	.. do	
	7 p. m.	—18.5	—16.5	—18	—17.5	—21	—21	—17	.60	N. by W....3	do	
Do.....	9. 6 a. m.	—22	—20	—22	—21	—25	—25	—21	.73	NW 6	Few clouds .	No. 0 ther. lowest last night, —28°.
	m.	— 5	— 3	— 4.5	— 4	— 7	— 7.5	—11	.72	NW 4	....do	
	3 p. m.	— 7	— 5	— 6	— 5	— 8	— 9	— 4.5	.73	NNW 5	....do	
	7 p. m.	—18.5	—15.5	—18	—17.5	—20.5	—20.5	—17.5	.73	NW 4	....do	

Locality.	Date.	Thermometers. 0.	3.	4.	5.	6.	7.	9.	Bar.	Wind.	Sky.	Remarks.
	1865.	°	°	°	°	°	°	°	*In.*			
7th Enc't, lat.	Apr. 10, 6 a. m.	—23	—21.5	—23.5	—22.5	—26	—26	—22	29.87	NNW 4	Cloudy	No. 0 ther. lowest last night, —27°; sun
64° 43′.2 N.;	m.	2.5	1.5	— 1	2	— 1.5	— 0.5	4	.94	N. by W 2	....do	Sun out. [out.
long. 87° 29′	3 p. m.	5	6	4	6	2	3	2.5	30.00	W. by N 1	Few clouds .	
W.	7 p. m.	—19	—16.5	—20	—18.5	—22	—22	—18.5	.05	NW 1	Cloudy ..	
Do	11, 6 a. m.	—22.5	—20	—23	—22	—26	—26	—21	.12	NNW 2	Few clouds .	No. 0 ther. lowest last night, —26°.
	m.	2.5	3	— 2	1	— 1	0	3	.12	NW 3	... do	
	3 p. m.	— 1.5	0	— 4	— 2	— 4	— 3.5	— 1	.14	NNW 4	....do	
	7 p. m.	—18	—15	—18	—17	—20	—20	—16.5	.13	NNW 3	Cloudy	
Do.	12, 6 a. m.	—13.5	—11	—13	—12.5	—16	—15.5	—12	.15	N. by E 4	....do	No. 0 ther. lowest last night, —24°.
	m.	2.5	4	0.5	3	2.5	3.5	6	.17	NE 7	....do	Snow-drift.
	3 p. m.	— 3	— 0.5	— 2	— 1.5	— 4	— 3	— 1	.21	NNE 7	do	Snow-drift; snow.
	7 p. m.	— 9	— 6	— 8	— 8	—10.5	—10	— 8	.22	N.....10	Overcast....	Snow-drift; snow.
Do . .	13, 6 a. m.	—16	—14	—15.5	—14.5	—18	—16.5	—12.5	.33	N.....8	Cloudy	Snow-drift; 0 ther.: max. 3°.5, min. —18°.
	m.	— 3.5	— 0.5	— 1	— 3	— 4.5	— 2	1.5	.37	N.....8	Few clouds	Snow-drift; sun out nearly all day.
	3 p. m.	— 7	— 5	— 6	— 5	— 8	— 9	— 4	.39	N.....7	....do	Snow-drift.
	7 p. m.	—12.5	—10	—10.5	—12	—15	—15	—11	.40	N 7	....do	
Do	14, 6 a. m.	—13	—10	—13.5	—12	—15.5	—15	—12	.58	NNW 9	....do	Snow-drift.
	m.	4	5.5	6	6	3	5.5	6	.64	NW 8	Cloudy	Snow-drift; 0 ther.: max. 4°, min. —18°.
	3 p. m.	1	3	3.5	2.5	— 0.5	1	2.5	.66	NW 6	....do	
	7 p. m.	— 9.5	— 7	— 7	— 9	—12	—11	— 8.5	.66	NW 4	Few clouds .	
*On way from	15, 6 a. m.	— 0.5	— 1	— 2	— 3	— 6	— 4	— 0.5	.67	WSW 1	Cloudy	No. 0 ther.: min. —14°.
7th to 8th En-	*m.	12	.....	.....	.....	.....	.....	.....	.60	W 2	Few clouds .	
campment.	3 p. m.	8	.....	.....	.....	.....	.....	.....	.51	WNW 2	....do	
**8th Encamp-	**7 p. m.	—12	.....	.....	.....	.....	.....	.....	.40	Calm	Clear	At midnight aurora and two shooting stars
ment, lat. 64°												to the N.
55′ N., long.	16, 6 a. m.	—13	.....	.....	.....	.....	.....	.....	.20	NNW 1	....do	Ther. lowest last night, —18°.
87° 27′ W.	m.	2	.....	.....	.....	.....	.....	.....	.17	NNW 4	Few clouds .	Sun visible from its rising to its setting.
	3 p. m.	2	.....	.....	.....	.....	.....	.....	.17	NNW 3	Cloudy	
	7 p. m.	— 7	.....	.....	.....	.....	.....	.....	.18	NNW 5	Few clouds .	
Do	17, 6 a. m.	—15	.....	.....	.....	.....	.....	.....	.17	W. by N 2	Clear	Ther. lowest last night, —20°.
	m.	0	.....	.....	.....	.....	.....	.....	.17	NNW 5	Few clouds .	
	3 p. m.	— 3	.....	.....	.....	.....	.....	.....	.17	NNW 3	....do	
	7 p. m.	—10	.....	.....	.....	.....	.....	.....	.17	W. by N 2	Hazy	Aurora to the S., 9 p. m.
Do.....	18, 6 a. m.	— 7	.....	.....	.....	.....	.....	.....	.17	NNW 2	Clear	Ther. lowest last night, —17°.
	m.	3	.....	.....	.....	.....	.....	.....	.17	NW 1	Few clouds .	Made by Too-koo-li-too.
	3 p. m.	0	.....	.....	.....	.....	.....	.....	.17	W 1	....do	Made by Too-koo-li-too.
	7 p. m.	— 7	.....	.....	.....	.....	.....	.....	.15	WSW 1	Cloudy	Aurora to the S., 9 p. m.
Do	19, 6 a. m.	2	.....	.....	.....	.....	.....	.....	.20	WSW 4	Overcast....	Ther. lowest last night, —7°.
	m.	15	.....	.....	.....	.....	.....	.....	.22	WSW 4	Cloudy	Made by Ebierbing.
	3 p. m.	13	.....	.....	.....	.....	.....	.....	.23	WSW 2	....do	Made by Too-koo-li-too.
	7 p. m.	— 2	.....	.....	.....	.....	.....	.....	.30	W. by S.....2	....do	
Do.....	20, 6 a. m.	— 9	.....	.....	.....	.....	.....	.....	.50	N 3	Few clouds .	Ther. lowest last night, —11°.
	m.	9	.....	.....	.....	.....	.....	.....	.64	NW 2	Cloudy	
	3 p. m.	4	.....	.....	.....	.....	.....	.....	.69	NNE 3	Few clouds .	
	7 p. m.	— 2	.....	.....	.....	.....	.....	.....	.75	NW 1	Clear	

APRIL, 1865.

Locality.	Date.	Thermometers. 0.	3.	4.	5.	6.	7.	9.	Bar.	Wind.	Sky.	Remarks.
	1865.	°	°	°	°	°	°	°	*In.*			
At 8th Enc'mpment, lat. 64° 55′ N., long. 87° 27′ W.	Apr. 21, 6 a. m.	— 5	.....	.....	.....	.....	.....	.....	30.69	SSW.....4	Overcast....	Ther. lowest last night, —15°.
	m.	12	.....	.....	.....	.....	.....	.....	.42	S. by W.....9	.....	Snow-drift; snow; made by Too-koo-li-too.
	3 p. m.	10	.....	.....	.....	.....	.....	.....	.34	S 10	.....	Snow-drift; snow; made by Too-koo-li-too.
	7 p. m.	9	.....	.....	.....	.....	.....	.....	.34	S. by E.....8	.....	Snow-drift; snow.
Do.....	22, 6 a. m.	15	.....	.....	.....	.....	.....	.....	.23	SSE 2	Overcast...	Snow; ther. lowest last night, 8°.
	m.	29	.....	.....	.....	.....	.....	.....	.25	SE.....3	... do	Snow.
	3 p. m.	20	.....	.....	.....	.....	.....	.....	.27	SE.....3	....do	Snow.
	7 p. m.	15	.....	.....	.....	.....	.....	.....	.30	SSE 4	....do	
Do.....	23, 6 a. m.	13	.....	.....	.....	.....	.....	.....	.25	SSE 5	....do	Ther. lowest last night, 8°.
	m.	22	.....	.....	.....	.....	.....	.....	.22	SSE 5	....do	Made by Too-koo-li-too.
	3 p. m.	15	.....	.....	.....	.....	.....	.....	.20	SSE 5	....do	Made by Too-koo-li-too.
	7 p. m.	10	.....	.....	.....	.....	.....	.....	.20	S. by E.....4	....do	
	24, 6 a. m.	10	.....	.....	.....	.....	.....	.....	.15	S. by E.....5	....do	Ther. lowest last night, 7°.
*On journey to 9th Enc't.	*m.	18	.....	.....	.....	.....	.....	.....	.14	SSE 7	Cloudy	Snow-drift.
**9th Encampment, lat. 65° 01′ N., long. 87° 34′ W.	**3 p. m.	15	.....	.....	.....	.....	.....	.....	.10	SSE 8	....do	Snow-drift.
	7 p. m.	12	.....	.....	.....	.....	.....	.....	.05	SSE 7	Overcast....	Snow-drift.
	25, 6 a. m.	5	.....	.....	.....	.....	.....	.....	.09	SSW 3	Clear	Ther. lowest last night, 5°.
	m.	26	.....	.....	.....	.....	.....	.....	.11	SW 5	....do	
	3 p. m.	19	.....	.....	.....	.....	.....	.....	.20	SW 5	....do	
	7 p. m.	1	.....	.....	.....	.....	.....	.....	.24	SW 2	Few clouds .	
Do.....	26, 6 a. m.	4	.....	.....	.....	.....	.....	.....	.29	N 3	Cloudy	Ther. lowest last night, — 3°.
	m.	20	.....	.....	.....	.....	.....	.....	.24	NNE 4	Overcast....	
	3 p. m.	17	.....	.....	.....	.....	.....	.....	.20	NE 3	Cloudy	Mock sun. Halo round sun. Made by Too-koo-li-too.
	7 p. m.	15	.....	.....	.....	.....	.....	.....	.18	NE 2	....do	
*On journey to 10th Encampment.	27, 6 a. m.	13	.....	.....	.....	.....	.....	.....	.15	SE... 2	.....	Ther. lowest last night, 6°.
	*m.	26	.....	.....	.....	.....	.....	.....	.12	SE.....4	Cloudy	Hazy.
	*3 p. m.	20	.....	.....	.....	.....	.....	.....	.13	E 5	Overcast....	
**10th Encampment; lat. 65° 8′ N., long. 87° 47′ W.	**7 p. m.	17	.....	.....	.....	.....	.....	.....	.17	E. by N 5	....do	
***On journ'y to 11th Encampment.	**28, 6 a. m.	16	.....	.....	.....	.....	.....	.....	.20	NE 2	.....	
	*** m.	20	.....	.....	.....	.....	.....	.....	Bar. left at 10th Enc't.	NE 7	Cloudy	Snow-drift.
	***3 p. m.	23	.....	.....	.....	.....	.....	.....		NE 4	Overcast....	
†11th Encampment; lat. 65° 15′ N, long. 88° 18′ W.	†7 p. m.	10	.....	.....	.....	.....	.....	.....		NNE 4	....do	Snow.
††On journey to 12th Encampment.	†29, 6 a. m.	11	.....	.....	.....	.....	.....	.....	.....	SE.....3	Cloudy	
	†† m.	21	.....	.....	.....	.....	.....	.....	.....	SE.....3	Overcast....	
	††3 p. m.	30	.....	.....	.....	.....	.....	.....	.....	E 4	....do	
††12th Enc'mpment; lat. 65° 18½′ N., long. 88° 40′ W.	††7 p. m.	19	.....	.....	.....	.....	.....	.....	.....	NE 2	... do	Snow.
	30, 6 a. m.	18	.....	.....	.....	.....	.....	.....	.....	W 2	Cloudy	Hazy.
	m.	25	.....	.....	.....	.....	.....	.....	.....	W 1	....do	Hazy.
	3 p. m.	30	.....	.....	.....	.....	.....	.....	.....	E 1	....do	Hazy.
	7 p. m.	15	.....	.....	.....	.....	.....	.....	.....	E 3	Overcast....	

Locality.	Date.	Thermometers. 0.	3.	4.	5.	6.	7.	9.	Bar.	Wind.	Sky.	Remarks.
	1865.	°	°	°	°	°	°	°	*In.*			
12th Enc't.	May 1, 6 a. m.	15								E ... 3	Cloudy	Fog; ther. lowest last night, 7°.
*On journey to	*m.	22								E ... 5	...do	
13th Enc't.	**3 p. m.	23								NE ... 4	...do	
**13th Encamp-	7 p. m.	16								NE ... 3	Overcast	
ment; lat. 65°	2, 6 a. m.	20								N ... 1	Cloudy	Snow; ther. lowest last night, 12°.
23′ N., long.	m.	26								N. by W ... 1	...do	Sun out part of day.
88° 53′ W.	3 p. m.	28								E ... 1		Snow; 3 inches of snow to 4 p. m.
	7 p. m.	10								SE ... 2	Cloudy	
Do	3, 6 a. m.	8								W ... 1	... do	Ther. lowest last night, 2°
	m.	19								NW ... 3	... do	Sun out nearly all day.
	3 p. m.	24								NW ... 3	Few clouds	
	7 p. m.	4								SE ... 2	... do	Great radiation as sun set behind ice of the Wager Bay; a long white fog-b'k forming
Do	4, 6 a. m.	9								SW ... 2	Cloudy	Ther. lowest last night, —10°. [there.
	m.	20								SW ... 7	Overcast	Snow-drift.
	3 p. m.	24								SW ... 7	...do	Snow drift.
	7 p. m.	10								NW ... 5	Cloudy	At 8.20 p. m. sun 1° high; aurora visible to W. and SW.; rays of a silvery and cream like color. Sun, when its full diameter was above the Wager Bay ice horizon, bore N. by compass.
Do	5, 6 a. m.	— 6								NW ... 4	... do	Fog; ther. lowest last night, —3°; halo about sun this a. m.
	m.	0								WNW ... 6	... do	Snow-drift; made by Too-koo-li-too.
	3 p. m.	5								WNW ... 7	... do	Snow-drift.
	7 p. m.	0								WNW ... 2	Clear	9 p. m., ther. —5°.
Do	6, 6 a. m.	— 6								SW ... 3	Cloudy	Ther. lowest last night, —11°; prismatic halo about sun this a. m.
	m.	19								SW ... 1	... do	Made by Too-koo-li-too.
	3 p. m.	8								NW ... 4	... do	Made by Too-koo-li-too.
	7 p. m.	— 3								N ... 5	Few clouds	
Do	7, 6 a. m	— 8								N ... 8	Cloudy	Snow-drift; ther. lowest last night, —10°.
	m.	2								N ... 8	Few clouds	Snow-drift; sun out.
	3 p. m.	0								N ... 8	...do	Snow-drift.
	7 p. m.	— 2								NW ... 8	... do	Snow-drift.
Do	8, 6 a. m.	— 7								W ... 3	Clear	Ther. lowest night, —9°.
	m.	4								NW ... 6	Few clouds	Snow-drift.
	3 p. m.	0								NW ... 7	... do	Snow-drift.
	7 p. m.	1								WNW ... 7	Clear	Snow-drift.
Do	9, 6 a. m.	0								NW ... 7	Few clouds	Snow-drift; ther. lowest last night, —3°.
	m.	8								WNW ... 7	Cloudy	Snow-drift; sun shining dimly.
	3 p. m.	9								NW ... 6	Few clouds	Snow-drift.
	7 p. m.	2								WNW ... 5	Cloudy	
Do	10, 6 a. m.	8								NW ... 7	...do	Snow-drift; ther. lowest last night, 1°.
	m.	10								NW ... 6	...do	Snow-drift; sun shining dimly.
	3 p. m.	12								NW ... 5	... do	
	7 p. m.	4								SW ... 1	...do	

MAY, 1865.

Locality.	Date.	Thermometers.							Bar.	Wind.	Sky.	Remarks.
		0.	3.	4.	5.	6.	7.	9.				
	1865.	°	°	°	°	°	°	°	*In.*			
13th Encampment; lat. 65° 23′ N., long. 88° 53′ W.	May 11, 6 a. m.	1	.....	.....	.....	.....	.....	.....	.....	SW 1	Cloudy	Fog; ther. lowest last night, —2°.
	m.	18	.....	.....	.....	.....	.....	.....	.....	SW 2	....do	Fog; sun shining dimly; made by Too-koo-li-too.
	3 p. m.	21	.....	.....	.....	.....	.....	.....	.....	SW 4	....do	Snow.
	7 p. m.	10	.....	.....	.....	.....	.....	.....	.....	SSW.....3	Overcast....	Snow.
Do	12, 6 a. m.	9	.....	.....	.....	.....	.....	.....	.....	SE 1	Cloudy	Fog; ther. lowest last night, 5°.
	m.	15	.....	.....	.....	.....	.....	.....	.....	NW 1	....do	Fog.
	3 p. m.	18	....	.....	.....	.....	.....	.....	.....	NW 4	... do	Fog.
	7 p. m.	8	.....	.....	.....	.....	.....	.....	.....	0	... do	Fog; snow.
Do	13, 6 a. m.	7	.....	.....	.....	.....	.....	.....	.....	W 1	Overcast....	
	m.	24	.....	.....	.....	.....	.....	.....	.....	NW	.....	Ther. lowest last night, —4°.
	7 p. m.	14	.....	.....	.....	.....	.....	.....	.....	NW	.....	
Do	14, 6 a. m.	12	.....	.....	.....	.....	.....	.....	.....	NW	....	Ther. lowest last night, 11°.
	m.	14	.....	.....	.....	.....	.....	.....	.....	NW	.....	Wind blew hard and snow flying thick all day.
	7 p. m.	12	.....	.....	.....	.....	.....	.....	.....	NW	.....	
Do.....	15, 6 a. m.	12	.....	.....	.....	.....	.....	.....	.....	NW	.....	Ther. lowest last night, 4°.
	m.	16	.....	.....	.....	.....	.....	.....	.....	NW	.....	
	7 p. m.	12	.....	.....	.....	.....	.....	.....	.....	NW	.....	
Do	16, 6 a. m.	14	.....	.....	.....	.....	.....	.....	.....	NW	.....	Ther. lowest last night, 11°.
	m.	23	.....	.....	.....	.....	.....	.....	.....	N	.....	
	7 p. m.	20	.....	.....	.....	.....	.....	.....	.....	NW	.....	
Do.....	17, 6 a. m.	14	.....	.....	.....	.....	.....	.....	.....	NW	.....	Ther. lowest last night, 12°.
	m.	24	.....	.....	.....	.....	.....	.....	.....	NW	.....	
	7 p. m.	20	.....	.....	.....	.....	.....	.....	.....	NW	.....	
Do.....	18, 6 a. m.	20	.....	.....	.....	.....	.....	.....	.....	E	.....	Ther. lowest night, 6°.
	m.	32	.....	.....	.....	.....	.....	.....	.....	E	.....	
	7 a. m.	23	.....	.....	.....	.....	.....	.....	.....	SE	.....	
On sledge journey to 10th Encampment and back to 13th Encampment.	13, 6 a. m.	.....	7	.....	.....	.....	.....	.....	.....	W 1	Overcast....	Ther. lowest last night, —4°.
	m.	.....	20	.....	.....	.....	.....	.....	.....	NW 1	Cloudy	
	3 p. m.	.....	19	.....	.....	.....	.....	.....	.....	NW 2	....do	
	7 p. m.	.....	18	.....	.....	.....	.....	.....	.....	N 5	.....	Snow and snow-drift.
	14, 6 a. m.	.....	10	.....	.....	.....	.....	.....	.....	NW 8	.....	Snow-drift; ther. lowest last night, 0°.
	m.	.....	20	.....	.....	.....	.....	.....	.....	NW 9	....	Snow-drift.
	3 p. m.	....	19	.....	.....	.....	.....	.....	.....	NW 9	Overcast....	Snow-drift.
	7 p. m.	.....	8	.....	.....	.....	.....	.....	.....	N 7	do	Snow-drift.
Do.....	15, 6 a. m.	.....	4	.....	.....	.....	.....	.....	.....	W. by N....7	Cloudy	Snow-drift; ther. lowest last night, —5°.
	m.	.....	20	.....	.....	.....	.....	.....	.....	WNW.....7	....do	Snow-drift.
	3 p. m.	.....	21	.....	.....	.....	.....	.....	.....	WNW.....7	....do	Snow-drift.
	7 p. m.	.....	15	.....	.....	.....	.....	.....	.....	WNW.....8	Overcast....	Snow-drift.
Do	16, 6 a. m.	.....	18	....	.....	.....	.....	.....	.....	N. by W... 3	... do	Snow; ther. lowest last night, —10°.
	m.	.....	23	.....	.....	.....	.....	.....	.....	NW 5	Cloudy	
	3 p. m.	.....	25	.....	.....	.....	.....	.....	.....	WNW.....4	....do	
	7 p. m.	.....	18	.....	.....	.....	.....	.....	.....	NW 6	Overcast....	Snow.

Made by Too-koo-li-too.

Locality.	Date.	Thermometers.							Bar.	Wind.	Sky.	Remarks.
		0.	3.	4.	5.	6.	7.	9.				
	1865.	°	°	°	°	°	°	°	*In.*			
On sledge journey to 10th Encampment and back to 13th Encampment.	May 17, 6 a. m.	....	16	.....	.....	.....	.....	.....	.....	NW 5	Cloudy	Ther. lowest last night, 11°.
	m.	.....	25	.....	.....	.....	.....	.....	.....	NW 3	Clear	
	3 p. m.	.....	27	.....	.....	.....	.....	.....	.....	NW 2	....do	
	7 p. m.	.....	17	.....	.....	.....	.....	.....	.....	NW 1	....do	
	18, 6 a. m.	.....	16	.....	.....	.....	.....	.....	.....	ESE 2	Overcast....	
	m.	.....	24	.....	.....	.....	.....	.....	.....	ESE 6	....do	Snow.
	3 p. m.	.....	26	.....	.....	.....	.....	.....	.....	SE 6	....do	
	7 p. m.	.....	21	.....	.....	.....	.....	.....	.....	SE 4	....do	
13th Encampment.	19, 6 a. m.	12	.....	.....	.....	.....	.....	.....	.....	WNW 3	Cloudy	Ther. lowest last night, 11°.
	m.	24	.....	.....	.....	.....	.....	.....	.....	NW 3	Overcast....	
Lat. 65° 23′ N.	3 p. m.	27	.....	.....	.....	.....	.....	.....	.....	NNW 1	....do	
Long. 88° 53′ W.	7 p. m.	15	.....	.....	.....	.....	.....	.....	.....	W 4	....do	
Do	20, 6 a. m.	17	.....	.....	.....	.....	.....	.....	.....	NW 2	Clear	Ther. lowest last night, 8°.
	m.	30	.....	.....	.....	.....	.....	.....	.....	NW 1	....do	
	3 p. m.	28	.....	.....	.....	.....	.....	.....	.....	NW 1	....do	
	7 p. m.	15	.....	.....	.....	.....	.....	.....	.....	NW 3	....do	
Do.....	21, 6 a. m.	10	.....	.....	.....	.....	.....	.....	.....	NW 2	....do	Ther. lowest last night, 1°.
	m.	28	.....	.....	.....	.....	.....	.....	.....	NW 1	....do	
	3 p. m.	30	.....	.....	.....	.....	.....	.....	.....	E 1	Hazy	At 3 p. m. temp. in sun's rays, 74°.
	7 p. m.	14	.....	.....	.....	.....	.....	.....	.....	ENE 1	Cloudy	At 4 p. m. snow-water on rocks.
Do.....	22, 6 a. m.	26	.....	.....	.....	.....	.....	.....	.....	SSE 0	Overcast....	Ther. lowest last night, 4°.
	m.	34	.....	.....	.....	.....	.....	.....	.....	SSE 2	... do	
	3 p. m.	35	.....	.....	.....	.....	.....	.....	.....	E 3	....do	
	7 p. m.	24	.....	.....	.....	.....	.....	.....	.....	ESE 2	.. do	
Do	23, 6 a. m.	24	.....	.....	.....	.....	.....	.....	.....	ENE 3	....do	Ther. lowest last night, 17°.
	m.	38	.....	.....	.....	.....	.....	.....	.....	E 2	... do	
	3 p. m.	30	.....	.....	.....	.....	.....	.....	.....	E 3	... do	
	7 p. m.	27	.....	.....	.....	.....	.....	.....	.....	ENE 3	Cloudy	
Do.....	24, 6 a. m.	24	.....	.....	.....	.....	.....	.....	30.42	NW 4	Overcast ...	Ther. lowest last night, 20°.
	m.	34	.....	.....	.....	.....	.....	.....	.42	NW 2	....do	Made by Too-koo-li-too.
	3 p. m.	33	.....	.....	.....	.....	.....	.....	.42	NW 2	... do	Made by Too-koo-li-too.
	7 p. m.	26	.....	.....	.....	.....	.....	.....	.43	NE 1	....do	Made by Too-koo-li-too.
Do	25, 6 a. m.	24	.....	.....	.....	.....	.....	.....	.40	W 1	....do	Ther. lowest last night, 18°.
	m.	34	.....	.....	.....	.....	.....	.....	.37	NW 1	....do	
	3 p. m.	40	.....	.....	.....	.....	.....	.....	.35	NW 1	Cloudy	
	7 p. m.	30	.....	.....	.....	.....	.....	.....	.34	SW 1	....do	
	26, 6 a. m.	30	.....	.....	.....	.....	.....	.....	.35	NE 1	Overcast ...	Ther. lowest last night, 20°.
On journey to 14th Encampment.	m.	Broke this ther.	72*	.....	.....	.....	.....	.....	.37	E 1	... do	* The ther. was on the N. side of the sled, but perhaps was affected unduly by some contiguous articles.
14th Encampment; lat. 65° 23′ N., long. 88° 41′ W.	3 p. m.	while	36	.....	.....	.....	.....	.....	.40	NE 2	....do	Sun out now and then.
	7 p. m.	unl'd-	30	.....	.....	.....	.....	.....	.45	NE 4	....do	
	27, 6 a. m.	ing	30	.....	.....	.....	.....	.....	.59	NW 5	.. do	Ther. lowest last night, 28°.
	m.	sled.	33	.....	.....	.....	.....	.....	.63	NW 6	....do	
	3 p. m.	.....	34	.....	.....	.....	.....	.....	.66	NW 5	Cloudy	
	7 p. m.	.....	27	.....	.....	.....	.....	.....	.75	NW 2	....do	Sun out from 4 p. m. until it set.

Locality.	Date.	Thermometers. 0.	3.	4.	5.	6.	7.	9.	Bar.	Wind.	Sky.	Remarks.
	1865.	°	°	°	°	°	°	°	*In.*			
14th Encampment; lat. 65° 23′ N., long. 88° 41′ W.	May 28, 6 a. m.		37						30.77	NW 3	Overcast....	Ther. lowest last night, 18°.
	m.		40						.74	SE..... 2	Cloudy	Sun out.
	3 p. m.		35						.72	SW..... 3	....do	Sun out.
	7 p. m.		30						.71	SW..... 1	Overcast....	
Do.	29, 6 a. m.		33						.48	E..... 5	....do	Ther. lowest last night, 21°.
	m.		30						.32	NE..... 7	.....	Snow.
	3 p. m.		28						.20	NNE 9	.....	Snow; snow-drift.
	7 p. m.		26						.15	NNE 9	.....	Snow; snow-drift.
Do.	30, 6 a. m.		21						.35	N..... 5	Cloudy	Sun out; ther. lowest last night, 18°.
	m.		24						.43	NNW 6	....do	Sun out.
*On journey to 15th Encampment.	*3 p. m.		22						.49	NNW 6	Overcast ..	Snow drift.
	**7 p. m.		20						.53	NNW 5	....do	
**15th Encampment; lat. 65° 19′ N., long. 88° 34′ W.	31, 6 a. m.		13						.50	NW 6	Cloudy	Sun out; snow-drift; ther. lowest last night, 10°.
	m.		20						.55	NW 5	....do	Sun out; snow-drift.
	3 p. m.		22						.58	NW 5	Few clouds .	Snow-drift.
	7 p. m.		23						.57	W 6	Clear	Snow-drift.
Do.	June 1, 6 a. m.		19						.65	W. by N 2	... do	Ther. lowest last night, 7°.
	m.		28						.58	WNW..... 3	... do	
	3 p. m.		26						.56	W..... 2	... do	
	7 p. m.		20						.56	W..... 1	Few clouds .	
Do.....	2, 6 a. m.		20							W..... 1	Overcast	Ther. lowest last night, 10°.
	m.		26							NW 3	... do	
	3 p. m.		29							NW. by N .. 5	Cloudy	
	7 p. m.		22							NW 3	....do	
Do.....	3, 6 a. m.		30							NW 2	....do	Misty; ther. lowest last night, 6°.
	m.		36							NNW 2	... do	Sun out dimly.
	3 p. m.		35							W..... 4	....do	Sun out.
	7 p. m.		26						.20	SW..... 8	Overcast....	
Do.....	4, 6 a. m.		24						.24	NNW 7	... do	Ther, lowest last night, 20°.
	m.		37						.22	W..... 5	....do	
	3 p. m.		34						.20	W..... 3	... do	Snow.
	7 p. m.											
On journey to 16th Enc't.	5, 6 a. m.		22						.20	NW 4	Overcast	Ther. lowest last night, 19°.
16th Enc't; lat. 65° 16′ N., long. 87° 19′ W.	m.		30						.21	NNW 4	Cloudy	Sun out dimly.
	3 p. m.		33						.27	NW 3	....do	Sun out dimly.
	7 p. m.		26						.28	W..... 1	Overcast....	
*17th Encampment; lat. 65° 22′.8 N., long. 87° 10′ W.	6, 6 a. m.		26						.26	N..... 3	....do	Ther. lowest last night, 23°.
	*m.		32						.24	N..... 1	... do	
	3 p. m.		35						.20	N..... 1	....do	Sun out.
	7 p. m.											
On journey to 18th Enc't.	7, 6 a. m.		20						.22	NW 3	Few clouds .	
	m.		28						.14	N 1	Cloudy	Sun out.
18th Enc't; lat. 65° 36′ N., long. 86° 37′ W.	3 p. m.											
	7 p. m.		22						.18	WNW.....	Overcast....	

Made by Too-koo-li-too.

Locality.	Date.	Thermometers. 0.	3.	4.	5.	6.	7.	9.	Bar.	Wind.	Sky.	Remarks.
	1865.	°	°	°	°	°	°	°	*In.*			
18th Encampment; lat. 65°	June 8, 6 a. m.											
36′ N., long.	m.											
86° 37′ W.	3 p. m.											
Do	7 p. m.											
	9, 6 a. m.											
	m.											
On journey to 19th Enc't.	3 p. m.											
	7 p. m.											
19th Enc't; lat. 65° 44′ N.,	10, 6 a. m.											
long. 86° 30′ W.	m.											
*On journey to	3 p. m.											
20th Encampment.	*7 p. m.											
**20th Encampment; lat. 66°	11, 6 a. m.											
10′ N., long.	m.											
85° 55′ W.	3 p. m.											
	7 p. m.											
Do	13, 6 a. m.		30							SW 3	Cloudy	Ther. lowest last night, 28°.
On journey to	m.		33							SW 6	do	Sun out.
21st Encampment.	3 p. m.											
	7 p. m.											
21st Encampment, lat. 66°	14, 6 a. m.											
15′ N., long.	m.											
85° 24′ W.	3 p. m.								30.23			Halo round sun.
Do	7 p. m.								.16			
	15, 6 a. m.		34						29.74	NE 8	Overcast	
	m.		36						.72	NE 8	do	
	3 p. m.		33						.70	NE 7	do	Snow.
	7 p. m.		32						.70	NE 7	do	Snow.
Do	16, 6 a. m.		36						.91	N. by E 2	do	
	m.		43						.90	N. by E 2	do	Little ice on the bay.
	3 p. m.		40						30.00	N. by E 1	do	
	7 p. m.		33						.02	NE 5	do	Snow.
Do	17, 6 a. m.		33						.35	N 3	do	
	m.		40						.42	N. by W 1	Cloudy	
	3 p. m.		42						.47	NNE 2	Overcast	
	7 p. m.		35						.50	NNE 5	do	Snow.
Do	18, 6 a. m.		30						.60	NW 3	Cloudy	Sun out; ther. lowest last night, 31°.
	m.		40						.63	NW 2	Few clouds	
	3 p. m.		42						.68	WNW 4	Clear	
	7 p. m.		32						.74	WNW 3	Few clouds	
Do	22, 6 a. m.											
	m.											
	3 p. m.											
	7 p. m.									NW 2		

Locality.	Date.	Thermometers.							Bar.	Wind.	Sky.	Remarks.
		0.	3.	4.	5.	6.	7.	9.				
	1865.	°	°	°	°	°	°	°	*In.*			
21st Encampment; lat. 66° 15′ N., long. 85° 24′ W.	June 23, 6 a. m.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
	m.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
	3 p. m.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
	7 p. m.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Do	24, 6 a. m.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Light shower of rain last night.
	m.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
	3 p. m.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
	7 p. m.	.....	.....	.....	.....	.....	.....	.....	.....	W. by S.... 3	.....	
Do	25, 6 a. m.	.....	40	.....	.....	.....	.....	.....	30.10	NW 4	Cloudy	Sun out now and then; ther. lowest last night, 32°; shower of rain last night.
	m.	.....	47	.....	.....	.....	.....	.....	.00	NW 2	....do	Sun out now and then.
	3 p. m.	.....	44	.....	.....	.....	.....	.....	.02	NW 3	....do	Sun out now and then.
	7 p. m.	.....	41	.....	.....	.....	.....	.....	.28	NNW 1	....do	Sun out now and then.
Do	26, 6 a. m.	.....	38	.....	.....	.....	.....	.....	.30	SE.....2	....do	Ther. lowest last night, 27°.
	m.	.....	47	.....	.....	.....	.....	.....	.31	SE.....2	Overcast....	
	3 p. m.	.....	48	.....	.....	.....	.....	.....	.32	SE.....1	... do	Great refraction.
	7 p. m.	.....	34	.....	.....	.....	.....	.....	.36	SE.....1	....do	Drizzling rain.
Do	27, 6 a. m.	.....	39	.....	.....	.....	.....	.....	.20	SSE 1	....do	Drizzling rain; ther. lowest last night, 31°.
	m.	.....	45	.....	.....	.....	.....	.....	.14	S 1	....do	
	3 p. m.	.....	46	.....	.....	.....	.....	.....	.19	SSW 1	....do	
	7 p. m.	.....	35	.....	.....	.....	.....	.....	.24	NW 3	....do	
Do	28, 6 a. m.	.....	37	.....	.....	.....	.....	.....	.28	NW 2	....do	
	m.	.....	40	.....	.....	.....	.....	.....	.30	NW 5	....do	
	3 p. m.	.....	42	.....	.....	.....	.....	.....	.33	NW 5	Cloudy	
	7 p. m.	.....	35	.....	.....	.....	.....	.....	.35	NNW 4	....do	
Do	29, 6 a. m.	.....	33	.....	.....	.....	.....	.....	.25	NW 4	....do	Sun out.
Do	July 1, 6 a. m.	.....	40	.....	.....	.....	.....	.....	.....	SSW 3	Overcast....	Snow and drizzling rain; ther. lowest last night, 38°.
	m.	.....	47	.....	.....	.....	.....	.....	.....	NE 4	....do	Snow and drizzling rain.
22d Encampment; lat. 66° 19′ N., long. 85° 29′ W.	3 p. m.	.....	40	.....	.....	.....	.....	.....	.....	NW 3	Cloudy	
	7 p. m.	.....	38	.....	.....	.....	.....	.....	.....	NW 2	....do	
	2, 6 a. m.	.....	43	.....	.....	.....	.....	.....	.24	NW 3	....do	
	m.	.....	48	.....	.....	.....	.....	.....	.28	W 2	....do	
	3 p. m.	.....	46	.....	.....	.....	.....	.....	.30	SW 1	Overcast....	
	7 p. m.	.....	39	.....	.....	.....	.....	.....	.30	SW 1	Cloudy	
Do	3, 6 a. m.	.....	40	.....	.....	.....	.....	.....	.30	N 2	...do	Ther. lowest last night, 31°.
	m.	.....	42	.....	.....	.....	.....	.....	.32	NNW 1	....do	
	3 p. m.	.....	50	.....	.....	.....	.....	.....	.35	NW 2	....do	
	7 p. m.	.....	41	.....	.....	.....	.....	.....	.40	NW 2	....do	
Do	4, 6 a. m.	.....	37	.....	.....	.....	.....	.....	.44	NNW 3	Overcast....	Ther. lowest last night, 32°.
	m.	.....	43	.....	.....	.....	.....	.....	.44	W 2	Cloudy	
	3 p. m.	.....	48	.....	.....	.....	.....	.....	.47	W 2	....do	
	7 p. m.	.....	40	.....	.....	.....	.....	.....	.50	N 1	....do	
Do	5, 6 a. m.	.....	38	.....	.....	.....	.....	.....	.50	WNW 2	... do	Ther. lowest last night, 32°.
	m.	.....	40	.....	.....	.....	.....	.....	.48	W 1	Few clouds .	Ther. in sun's rays, 78°.
	3 p. m.	.....	46	.....	.....	.....	.....	.....	.48	W 1	....do	
	7 p. m.	.....	44	.....	.....	.....	.....	.....	.48	NE 1	....do	

Locality.	Date.	Thermometers. 0.	3.	4.	5.	6.	7.	9.	Bar.	Wind.	Sky.	Remarks.
	1865.	°	°	°	°	°	°	°	*In.*			
22d Encampment; lat. 66° 19′ N., long. 85° 29′ W.	July 6, 6 a. m.	.....	40	.....	.....	.....	.....	.....	30.34	SSE 2	Cloudy	Ther. lowest last night, 30°.
	m.	.....	54	.....	.....	.....	.....	.....	.22	SSE 2	... do	
	3 p. m.	.....	51	.....	.....	.....	.....	.....	.24	SE 3	Overcast....	
	7 p. m.	.....	43	.....	.....	.....	.....	.....	.26	ESE 4	....do	
Do.....	7, 6 a. m.	.....	42	.....	.....	.....	.....	.....	.22	NW 1	....do	Ther. lowest last night, 37°.
	m.	.....	49	.....	.....	.....	.....	.....	.19	S 1	... do	
	3 p. m.	.....	52	.....	.....	.....	.....	.....	.15	SSE 1	....do	
	7 p. m.	.....	37	.....	.....	.....	.....	.....	.24	SE 2	... do	Drizzling rain.
Do.....	8, 6 a. m.	.....	41	.....	.....	.....	.....	.....	.25	S 1	....do	Ther. lowest last night, 35°.
	m.	.....	52	.....	.....	.....	.....	.....	.28	SE 1	Cloudy	
	3 p. m.	.....	54	.....	.....	.....	.....	.....	.30	SE 1	.. do	
	7 p. m.	.....	45	.....	.....	.....	.....	.....	.38	SE 2	Few clouds .	
Do.....	9, 6 a. m.	.....	39	.....	.....	.....	.....	.....	.39	N 1	Cloudy	Ther. lowest last night, 33°.
	m.	.....	45	.....	.....	.....	.....	.....	.43	SW 1	....do	8 a. m., light rain for 1 hour.
	3 p. m.	.....	49	.....	.....	.....	.....	.....	.43	SSW 1	....do	
	7 p. m.	.....	47	.....	.....	.....	.....	.....	.48	Calm	Few clouds .	
Do.....	10, 6 a. m.	.....	40	.....	.....	.....	.....	.....	.53	SSW 2	Cloudy	Ther. lowest last night, 32°.
	m.	.....	46	.....	.....	.....	.....	.....	.55	SSW 2	Few clouds .	From 7 to 9 a. m., light showers of rain.
	3 p. m.	.....	50	.....	.....	.....	.....	.....	.55	S 3	....do	
	7 p. m.	.....	41	.....	.....	.....	.....	.....	.60	SE 3	Clear	
Do.....	11, 6 a. m.	.....	38	.....	.....	.....	.....	.....	.74	N 1	Cloudy	Ther. lowest last night, 32°.
	m.	.....	47	.....	.....	.....	.....	.....	.75	NNE 1	Few clouds .	1.30 p. m., ther. in sun, resting on dark-colored blanket, 90°.
	3 p. m.	.....	50	.....	.....	.....	.....	.....	.74	Calm	... do	Great refraction.
	7 p. m.	.....	50	.....	.....	.....	.....	.....	.74	N 1	....do	
Do	12, 6 a. m.	.....	44	.....	.....	.....	.....	.....	.82	N 1	....do	Ther. lowest last night, 37°.
	m.	.....	50	.....	.....	.....	.....	.....	.79	NNW 1	... do	Tide began to fall 3.30.
	3 p. m.	.....	50	.....	.....	.....	.....	.....	.74	NNW 1	Clear	Great refraction.
	7 p. m.	.....	51	.....	.....	.....	.....	.....	.68	N 1	.. do	9.30 p. m., ther. 49°.
Do.....	13, 6 a. m.	.....	40	.....	.....	.....	.....	.....	.70	Calm	... do	Ther. lowest last night, 37°.
	m.	.....	55	.....	.....	.....	.....	.....	.60	SSW 1	....do	
	3 p. m.	.....	50	.....	.....	.....	.....	.....	.58	SSW 1	....do	Tide began to fall, 4.20.
	7 p. m.	.....	48	.....	.....	.....	.....	.....	.58	ESE 3	Few clouds .	
Do.....	14, 8 a. m.	.....	43	.....	.....	.....	.....	.....	.56	SE 2	... do	Ther. lowest last night, 38°.
	m.	.....	48	.....	.....	.....	.....	.....	.50	S. by E..... 3	Cloudy	Fog.
	3 p. m.	.....	50	.....	.....	.....	.....	.....	.42	SSE 3	....do	Tide began to fall 5.05.
	7 p. m.	.....	46	.....	.....	.....	.....	.....	.40	SSE 2	Clear	
Do.....	15, 6 a. m.	.....	42	.....	.....	.....	.....	.....	.32	SE 4	Overcast....	Fog; ther. lowest last night, 37°.
	m.	.....	50	.....	.....	.....	.....	.....	.17	SSE 4	Cloudy	
	3 p. m.	.....	54	.....	.....	.....	.....	.....	.12	SE 4	....do	
	7 p. m.	.....	45	.....	.....	.....	.....	.....	.02	S 4	Overcast....	
Do.....	16, 6 a. m.	.....	41	.....	.....	.....	.....	.....	29.90	SE 6	.....	Ther. lowest last night, 37°; thunder, lightning, and passing showers.
	m.	.....	49	.....	.....	.....	.....	.....	.82	NW 2	Cloudy	Fog.
	3 p. m.	.....	58	.....	.....	.....	.....	.....	.81	NW 2	....do	
	7 p. m.	.....	48	.....	.....	.....	.....	.....	.90	N 1	....do	

JULY—AUGUST, 1865.

Locality.	Date.	Ther. 3.	Bar.	Wind.	Sky.	Remarks.
	1865.	°	*In.*			
22d Encampment; lat. 66° 19′ N., long. 85° 29′ W.	July 17, 6 a. m.	42	29. 91	NW 5	Cloudy	Ther. lowest last night, 38°.
	m.	47	.96	N 4	....do	
	3 p. m.	52	30. 03	NNE 1	Few clouds .	
	7 p. m.	.....	.....	.....	.....	
Do.....	18, 6 a. m.	43	.19	NNE 1	Few clouds .	Ther. lowest last night, 39°.
	m.	53	.28	NNE 3	... do	
	3 p. m.	64	.33	NE 5	Cloudy	
	7 p. m.	48	.40	Calm	Clear	
Do.....	19, 6 a. m.	46	.55	Calm	Few clouds .	Ther. lowest last night, 40°.
	m.	58	.56	Calm	Cloudy	
	3 p. m.	59	.54	SSW.....1	....do	
	7 p. m.	46	.52	SE.....4	....do	
Do.....	20, 6 a. m.	44	.50	SE 1	... do	Ther. lowest last night, 38°.
	m.	58	.43	SE 1	Few clouds .	
	3 p. m.	62	.37	SE 2	....do	
	7 p. m.	47	.12	NNW 4	Cloudy	Fog.
Do.....	21, 6 a. m.	43	.24	NNW 6	....do	Ther. lowest last night, 39°.
	m.	44	.30	NNW 6	....do	
	3 p. m.	44	.35	NW 6	....do	
	7 p. m.	42	.36	NW 7	Few clouds .	
Do	22, 6 a. m.	.....	.....	.....	.....	
	m.	50	.22	W 2	Cloudy	Ther. lowest last night, 38°.
	3 p. m.	48	.22	NW 3	....do	
	7 p. m.	46	.20	N 2	....do	
Do.....	23, 6 a. m.	42	.16	NNW 3	....do	Ther. lowest last night, 37°.
	m.	46	.15	W 3	....do	
	3 p. m.	53	.10	SE	....do	
	7 p. m.	43	.00	SE	Overcast....	
Do.....	24, 6 a. m.	40	29. 54	SE 4	....do	Fog; passing showers, thunder, and lightning; ther. lowest last night, 39°.
	m.	41	.50	SE..... 2	... do	Fog; misty.
	3 p. m.	39	.48	S 2	....do	Fog; drizzling rain.
	7 p. m.	37	.48	NNW 5	... do	Fog; drizzling rain.
Do.....	25, 6 a. m.	36	.60	NNW 6	....do	Fog; ther. lowest last night, 34°.
	m.	42	.71	NW 6	... do	
	3 p. m.	40	.80	NW 6	Cloudy	
	7 p. m.	34	.93	NW 6	Few clouds .	
Do.....	26, 6 a. m.	36	30. 08	NW 4	Cloudy	Ther. lowest last night, 32°.
	m.	44	.10	NW 4	Overcast....	Drizzling rain.
	3 p. m.	45	.17	NNW 3	....do	Drizzling rain.
	7 p. m.	38	.23	NNW 5	... do	Drizzling rain.
Do.....	27, 6 a. m.	44	.30	NE 3	Cloudy . ..	Ther. lowest last night, 34°.
	m.	47	.32	E 1	....do	
	3 p. m.	48	.35	SSW 1	... do	
	7 p. m.	44	.44	SE 1	Few clouds .	
Do.....	28, 6 a. m.	42	.50	Calm ....do		Ther. lowest last night, 32°.
	m.	49	.44	SSW 1	... do	
	3 p. m.	49	.43	SSW 1	... do	
	7 p. m.	45	.40	SE 2	... ...	Hazy.
Do. . .	29, 6 a. m.	40	.31	NNW 1	Clear	Ther. lowest last night, 33°.
	m.	50	.13	NNW 4	Cloudy	
	3 p. m.	52	.00	NW 3	....do	
	7 p. m.	43	.03	NW 2	... do	
Do.....	30, 6 a. m.	36	.05	SW 1	Few clouds .	Ther. lowest last night, 36°.
	m.	50	.03	SSW 2	....do	
	3 p. m.	50	.04	SSW 2	....do	
	7 p. m.	44	.06	SSW 2	Cloudy	
Do.....	31, 6 a. m.	43	.08	SE 3	.....	Hazy.
	m.	50	.04	SE 5	Cloudy	
	3 p. m.	52	.02	SSW 1	Overcast....	
	7 p. m.	45	.02	SW 2	... do	
Do.....	Aug. 1, 6 a. m.	40	29. 94	Calm	.....	Fog; misty; ther. lowest last
	m.	50	.92	Calm	....	Fog; misty. [night, , 36°.
	3 p. m.	48	.....	Calm	.....	Fog.
	7 p. m.	45	.96	N 1	Overcast....	Fog.
Do.....	2, 6 a. m.	40	.98	NW 4	... do	Ther. lowest last night, 35°.
	m.	47	.92	WNW 3	Few clouds .	
	3 p. m.	50	.92	NNE 3	... do	
	7 p. m.	46	.92	NNW 5	Cloudy	
Do	3, 6 a. m.	39	.84	NNW 3	Overcast....	Ther. lowest last night, 39°.
	m.	41	.82	NNW 6	... do	Rain.
	3 p. m.	44	.80	NW 6	Cloudy	
	7 p. m.	36	.80	NW 6	...do	

AUGUST, 1865.

Locality.	Date.	Ther. 3.	Bar.	Wind.	Sky.	Remarks.
	1865.	°	*In.*			
22d Enc't.	Aug. 4, 6 a. m.	33	29.82	NNW 6	Cloudy	Ther. lowest last night, 32°.
Lat. 66° 19′ N.	m.	45	.78	NNW 5	... do	
Long. 85° 29′ W.	3 p. m.	42	.80	NNW 3	....do	
	7 p. m.	35	.84	NW 4	....do	
Do.....	5, 6 a. m.	32	.92	NW 2	Few clouds	Ther. lowest last night, 28°.
	m.	44	.84	S 2	Cloudy	
	3 p. m.	46	.84	S 3	....do	
	7 p. m.	40	.85	S 2	Overcast....	
Do.....	6, 6 a. m.	32	30.00	WSW 2	Cloudy	Ther. lowest last night, 31°.
	m.	44	29.98	SSW 2	....do	
	3 p. m.	44	.96	SSW 2	....do	
	7 p. m.	36	.92	SE.....4	Overcast....	8 p. m., rain.
Do.....	7, 6 a. m.	37	.74	S 1	....	Rain; fog; ther. lowest last night, 34°.
	m.	47	.70	SE 3	Cloudy	Fog; great refraction.
*On journey to	*3 p. m.	45	.67	SE.....3	.....	Rain.
23d Enc't.	**7 p. m.	40	.60	NE 4	.....	Rain.
**23d Enc't.	8, 6 a. m.	38	.53	NW 3	Cloudy	Ther. lowest last night, 35°.
Lat. 66° 30′ N.	m.	45	.60	NW 5	Few clouds .	
Long. 86° 3′ W.	3 p. m.	47	.64	N.....	Cloudy	
	7 p. m.	44	.68	SE..... 3	....do	
Do.....	9, 6 a. m.	38	.70	W 5	....do	Ther. lowest last night, 34°.
	m.	45	.67	W 5	....do	
	3 p. m.	50	.70	W 6	....do	Sprinkling now and then.
	7 p. m.	41	.82	W 6	... do	
Do	10, 6 a. m.	40	.90	WSW 5	...do	Ther. lowest last night, 36°.
	m.	42	.95	SW 4	....do	
	3 p. m.	44	30.02	SW 4	Overcast....	
	7 p. m.	40	.10	SW 2	.. do	
Do.....	11, 6 a. m.	36	.26	SSE 3	.. do	Rain; ther. lowest last night, 36°.
	m.	37	.30	SE.....4	....do	Rain.
	3 p. m.	39	.30	SE.....4	....do	
	7 p. m.	35	.38	ESE 3	....do	Rain.
Do.....	12, 6 a. m.	35	.45	ENE 2	....do	Rain; fog; ther. lowest last night, 33°.
	m.	46	.42	NE 2	....do	Rain; fog.
	3 p. m.	43	.42	E 3	....do	Rain; fog.
	7 p. m.	38	.45	E 2	... do	Rain; ebb tide sets to the SSE.
Do.....	13, 6 a. m.	40	.35	ENE 3	....do	Rain; ther. lowest last night, 38°.
	m.	42	.30	NNE 3	....do	Rain.
	3 p. m.	42	.28	NE 4	....do	Rain.
	7 p. m.	40	.25	NE 4	....do	Rain.
Do.....	14, 6 a. m.	39	.11	NNE 3	....do	Rain; ther. lowest last night, 39°.
	m.	44	.08	ENE 2	....do	Rain.
	3 p. m.	42	.08	SW 1	... do	
	7 p. m.	40	.10	SSW 1	....do	
Do.....	15, 6 a. m.	38	.12	ESE 2	.....	Fog.
	m.	48	.14	SSE 2	.....	Fog.
	3 p. m.	46	.14	SSE 2	Few clouds .	
	7 p. m.	42	.16	ESE 2	Overcast...	
Do....	16, 6 a. m.	42	.18	WSW 1	Cloudy ...	Ther. lowest last night, 40°.
	m.	48	.15	W. by S 3	....do	
	3 p. m.	46	.14	SW 3	... do	
	7 p. m.	42	.14	SSW 3	Few clouds	
Do....	17, 6 a. m.	36	.18	SE.....1	....do	Ther. lowest last night, 36°.
	m.	50	.08	E 5	Overcast....	
	3 p. m.	44	.06	E 6	.. do	Rain.
	7 p. m.	38	.09	ENE 4	... do	
Do.....	18, 6 a. m.	38	.20	ENE 3	.. do	Rain; ther. lowest last night, 38°.
	m.	50	.24	ENE 2	.. do	
	3 p. m.	51	.25	NE 3	....do	
	7 p. m.	40	.33	E 5	....do	
Do.....	19, 6 a. m.	39	.35	NE 2	... do	Ther. lowest last night, 38°.
	m.	47	.41	NE 1	....do	
	3 p. m.	50	.46	W 1	Cloudy	
	7 p. m.	42	.50	WNW 1	Few clouds .	
Do.....	20, 6 a. m.	40	.50	E 1	Cloudy	Ther. lowest last night, 37°.
	m.	44	.52	SW 2	Few clouds .	Fog.
	3 p. m.	42	.52	SW 3	do	
	7 p. m.	40	.54	SW 1	Cloudy ...	

AUGUST—SEPTEMBER, 1865.

Locality.	Date.	Ther. 3.	Bar.	Wind.	Sky.	Remarks.
	1865.	°	*In.*			
23d Enc't.	Aug. 21, 6 a. m.	41	30.57	W 1	Overcast ...	Ther. lowest last night, 38°.
Lat. 66° 30′ N.	m.	48	.57	SW 2	....do	
Long. 86° 3′ W.	3 p. m.	45	.61	SSW 1	Cloudy	
	7 p. m.	40	.65	SSE 1	.....	Fog; 5 p. m., fog-bow.
Do.....	22, 6 a. m.	38	.62	Calm	.....	Fog; ther. lowest last night, 36°.
	m.	40	.58	S 2	Cloudy	Fog.
	3 p. m.	42	.46	SW 2	Few clouds .	
	7 p. m.	36	.48	E 1	....do	
Do.....	23, 6 a. m.	38	.34	E 3	....	Fog; ther. lowest last night, 35°.
	m.	42	.22	E 3	.....	Fog.
	3 p. m.	40	.10	E 3	Cloudy	
	7 p. m.	40	.20	E 1	....do	
Do.....	24, 6 a. m.	37	.12	WNW 1	Few clouds .	Ther. lowest last night, 32°.
	m.	48	29.94	Calm	....do	
	3 p. m.	46	.92	SE 2	... do	
	7 p. m.	39	30.00	SE(?) 1	....do	
Do.....	25, 6 a. m.	36	.00	Calm	.. do	Ther. lowest last night, 34°.
	m.	45	.01	SE 1	....do	
24th Enc't.	3 p. m.	44	.02	SE 1	Cloudy	
Lat. 66° 29′ N.	7 p. m.	40	.02	NNW 5	....do	
Long. 86° 18′ W.	26, 6 a. m.	35	.19	NNW 2	....do	Ther. lowest last night, 33°.
	m.	41	.24	NW 3	....do	Broke other large thermometer.
	3 p. m.	40	.30	NNW 5	....do	
	7 p. m.	37	.36	NNW 3	....do	
Do.....	27, 6 a. m.	40	.40	NNW 4	....do	Ther. lowest last night, 37°.
	m.	43	.43	NNW 5	....do	A little rain.
	3 p. m.	43	.42	N. by W....5	....do	
	7 p. m.	34	.46	N. by W....5	....do	
Do.....	28, 6 a. m.	32	.52	W 1	....do	Ther. lowest last night, 27°.
	m.	42	.43	SSE 3	....do	
	3 p. m.	38	.40	S 5	....do	
	7 p. m.	36	.36	S 6	....do	
Do.....	29, 6 a. m.	34	.10	SE 5	.....	Rain; fog; ther. lowest last night, 34°.
	m.	43	.10	SE 4	.....	Rain; fog.
	3 p. m.	43	.10	SE 2	Overcast....	Rain.
	7 p. m.	40	.11	NW 6	....do	
Do.....	30, 6 a. m.	34	.32	NNW 3	....do	Ther. lowest last night, 33°.
	m.	42	.32	SW 3	Cloudy	
	3 p. m.	42	.32	SSW 3	....do	
	7 p. m.	37	.30	SSW 5	Overcast...	Fog.
Do.....	31, 6 a. m.	42	.24	SE 1	Cloudy	Fog; ther. lowest last night, 37°.
	m.	44	.14	SE 2	....do	
	3 p. m.	43	.14	NE 4	... do	
	7 p. m.	40	.20	NE 5	Overcast....	
Do	Sept. 1, 6 a. m.	37	.30	NNE 3	Few clouds .	Ther. lowest last night, 36°.
	m.	43	.32	SE 2	Cloudy	
	3 p. m.	41	.34	NW 1	Few clouds .	
	7 p. m.	37	.34	NW 1	Cloudy	
Do...	2, 6 a. m.	36	.48	NNW 5	....do	Ther. lowest last night, 32°.5.
	m.	37	.50	NNW 3	....do	Snow.
	3 p. m.	41	.48	SW 1	....do	
	7 p. m.	40	.48	Calm	....do	
Do.....	3, 6 a. m.	33	.58	NNW 3	....do	Ther. lowest last night, 33°.
25th Enc't.	m.					
Lat. 66° 30′ N.						
Long. 86° 44′ W.						
Do.....	4, 6 a. m.	27	.....	SE 4	....do	Ther. lowest last night, 26°.
	m.	44	.....	SE 3	....do	Halo round sun from 8 to 10.
	3 p. m.	44	.....	SE 3	... do	
	7 p. m.	37	.....	SE 1	....do	
26th Enc't, Fort	5, 6 a. m.	25	.....	Calm	Few clouds .	Ther. lowest last night, 25°.
Hope.	m.	42	.....	SE 2	....do	
Lat. 66°31′ N.	3 p. m.	40	.....	SE 2	Clear	
Long. 86° 56′ W.	7 p. m.	34	.....	SE 1	Few clouds .	
Do.....	6, 6 a. m.	26	.....	Calm	....do	Ther. lowest last night, 25°.
	m.	48	.....	E 2	....do	
	3 p. m.	48	.....	E 1	....do	
	7 p. m.	36	.....	E 1	....do	
Do.....	7, 6 a. m.	35	.36	E 1	Cloudy ...	Ther. lowest last night, 28°.
	m.	47	.38	ESE 2	....do	
	3 p. m.	50	.42	W 2	Few clouds .	
	7 p. m.	40	.46	W 3	Clear	

SEPTEMBER, 1865.

Locality.	Date.	Ther. 3.	Bar.	Wind.	Sky.	Remarks.
	1865.	°	*In.*			
26th Enc't, Fort Hope.	Sept. 8, 6 a. m.	34	30.54	E 1	Overcast	Ther. lowest last night, 31°.
	m.	42	.45	SE 2	....do	
Lat. 66° 31′ N.	3 p. m.	42	.39	ESE 4	.....	Rain.
Long. 86° 56′ W.	7 p. m.	38	.34	ESE 6	.....	Rain.
Do	9, 6 a. m.	33	29.90	ESE 2	.....	Snow; ther. lowest last night, 32°.
	m.	.....	.87	NW 3	Overcast ...	
	3 p. m.	38	.85	NW 4	... do	Mist.
	7 p. m.	34	.86	NW 4	... do	Rain.
Do	10, 6 a. m.	32	30.04	NW 6	Few clouds .	Ther. lowest last night, 28°.
	m.	40	.... ..	NW 5	Cloudy	
	3 p. m.	38	... .	NW 4	....do	
	7 p. m.	33	... .	NW 1	Clear	
Do	11, 7 p. m.	36	29.90	SSE 3	Overcast	
Do	12, 6 a. m.	37	.94	SW 3	... do	
	m.	42	.97	SW 4	....do	
Do	13, 6 a. m.	36	.98	S 4	....do	
	m.	40	.92	SE 3	....do	
	3 p. m.	.....	.90	SE 3	....do	Rain.
	7 p. m.	.....	.88	ESE 2	....do	Rain.
Do	14, 6 a. m.	26	30.06	N 5	Cloudy	Ther. lowest last night, 25°.
Do	16, 7 a. m.	26	.02	W 5	Overcast	Ther. lowest last night, 24°.
	7 p. m.	.....	29.80	WSW 5	....do	
Do	17, 7 a. m.	30	30.00	WNW 4	Cloudy	Ther. lowest last night, 26°.
	7 p. m.	27	.02	W 3	Overcast	
Do	18, 7 a. m.	24	.20	NW 6	Cloudy	Ther. lowest last night, 23°.
	m.	30	.....	NW 5	.....	Snow.
	3 p. m.	28	.....	NW 5	....	Snow.
	7 p. m.	26	.12	NW 5	Cloudy	
Do	19, 7 a. m.	22	.22	N 2	... do	Ther. lowest last night, 18°.
	m.	.....	.....	N 4	Overcast ...	
	3 p. m.	.....	.....	N 5	.....	Snow.
	7 p. m.	22	.24	NNW 2	Overcast	
Do	20, 7 a. m.	20	.23	NW 3	....do	Ther. lowest last night, 20°.
	m.	.....	.....	NW 5	.....	Snow.
	3 p. m.	.....	.....	NW 6	.....	Snow.
	7 p. m.	20	.30	NW 6	....	Snow.
Do	21, 7 a. m.	20	.40	NW 6	Cloudy	Ther. lowest last night, 18°.
	m.	24	.46	NW 7	.....	Snow.
	3 p. m.	25	.46	NW 7	.....	Snow.
	7 p. m.	22	.48	NW 6	.....	Snow.
Do	22, 6 a. m.	20	.50	NW 5	Few clouds .	Ther. lowest last night, 20°.
	m.	33	.48	NW 5	....do	
	3 p. m.	34	.48	NW 4	....do	
	7 p. m.	26	.50	N. by W ... 2	Cloudy	
Do	23, 6 a. m.	30	.38	SE 3	Overcast	Ther. lowest last night, 20°.
	m.	.....	.....	SE 4	.....	Rain and snow.
	3 p. m.	.....	.....	SE 5	.....	Rain and snow.
	7 p. m.	32	29.82	E 1	.....	Rain and snow.
Do	24, 6 a. m.	26	30.00	NW 10	....	Drizzling rain and snow; ther. lowest last night, 26°.
	m.	26	.20	NW 10	Cloudy	Drizzling rain and snow.
	3 p. m.	25	.28	NNW 8	... do	
	7 p. m.	22	.33	N. by W 8	....do	
Do	25, 6 a. m.	20	.56	NNW 5	...do	Ther. lowest last night, 17°.
	m.	.....	.....	N 3	... do	
	3 p. m.	.....	.....	N 3	....do	
	7 p. m.	22	.51	ENE 1	Overcast	
Do	26, 6 a. m.	24	.30	SE 1	... do	Ther. lowest last night, 22°.
	m.	32	.21	SE 3	... do	Snow.
	3 p. m.	.....	.....	SE 4	... do	Snow.
	7 p. m.	30	.04	SE 4	.....	Snow.
Do	27, 6 a. m.	26	29.98	N. by W 4	Overcast	Snow; ther. lowest last night, 26°.
	m.	.....	.....	NNW 7	Cloudy	Drizzling rain.
	3 p. m.	.....	.....	NW 9	....do	Drizzling rain.
	7 p. m.	22	30.30	NW 10	....do	Drizzling rain.
Do	28, 6 a. m.	22	.66	NNW 5	Overcast	Snow.
	m.	.....	.....	NNW 4	.. do	
	3 p. m.	.....	.....	NNW 4	....do	
	7 p. m.	18	.80	N. by W 2	....do	
Do	29, 6 a. m.	13	.78	NW 2	Cloudy	Ther. lowest last night, 9°.
	m.	.....	.....	NW 1	....do	
	3 p. m.	.....	.....	SE 1	....do	
	7 p. m.	22	.60	E 1	Overcast ...	

SEPTEMBER—OCTOBER, 1865.

Locality.	Date.	Ther. 3.	Bar.	Wind.	Sky.	Remarks.
	1865.	°	*In.*			
26th Enc't, Fort	Sept. 30, 6 a. m.	12	30.58	N. by W....2	Overcast ...	Ther. lowest last night, 9°.
Hope.	m.	20	.64	N 4	Cloudy	
Lat. 66° 31′ N.	3 p. m.	.. ....	.. ...	N. by W....5	....do	
Long. 86° 56′ W.	7 p. m.	18	.72	NNW 5	.....	
Do.....	Oct. 1, 6 a. m.	7	.55	NW 3	Overcast....	Snow; ther. lowest last night, 5°.
	m.	24	.72	NW 2	....do	
	7 p. m.	18	.70	NE 1	....do	
Do.....	2, 7 a. m.	20	.70	S. by W 3	....do	Ther. lowest last night, 17°.
	m.	28	.68	S 4	....do	
	7 p. m.	27	.68	S 3	....do	
Do.....	3, 7 a. m.	28	.55	S. by E 5	....do	Ther. lowest last night, 27°.
	m.	34	.47	S 4	....do	
	7 p. m.	34	.38	S. by W 1	....do	
Do..... ...	4, 7 a. m.	32	.25	SSE 1	....do	Ther. lowest last night, 32°.
	m.	....	.00	SE..... 4	.....	Fog; rain.
	7 p. m.	32	29.80	SE.....5	.....	Rain.
Do.....	5, 7 a. m.	30	.90	NW 9	Overcast....	Snow; ther. lowest last night, 30°.
	m.	28	.97	NW 9	Cloudy	
	7 p. m.	26	30.07	NNW 8	....do	
Do.....	6, 7 a. m.	26	.00	NW 8	Overcast....	Ther. lowest last night, 26°.
	m.	27	29.98	NW 9	Cloudy	
	7 p. m.	24	.98	NW 9	Overcast....	
Do.....	7, 7 a. m.	24	30.20	NW 5	Cloudy	Ther. lowest last night, 23°.
	m.	28	.20	NW 3	... do	
	7 p. m.	20	.26	NW 1	....do	
Do.....	8, 7 a. m.	22	.22	SSW..... 2	Overcast ...	Ther. lowest last night, 14°.
	m.	27	.23	SSW.....1	....do	
	7 p. m.	28	.26	S. by E 2	... do	
Do.....	9, 7 a. m.	23	.34	S 1	....do	Fog; ther. lowest last night, 22°.
	m.	30	.36	SSE 1	Cloudy	Fog.
	7 p. m.	24	.38	NNE 1	Overcast....	
Do.....	10, 7 a. m.	21	.45	NW 3	Cloudy	Ther. lowest last night, 20°.
	m.	23	.45	NW 4	Overcast ...	Snow spitting at times.
	7 p. m.	21	.46	NNW	... do	
Do.....	11, 7 a. m.	23	.38	NW 3	... do	Ther. lowest last night, 19°.
	m.	25	.32	NW 4	... do	
	7 p. m.	18	.36	NW 5	... do	Snow.
Do.....	12, 7 a. m.	6	.30	N 1	....do	Ther. lowest last night, 3°.
	m.	18	.32	N.....2	Cloudy	
	7 p. m.	10	.34	N. by E ... 2	.. do	Fog.
Do.....	13, 7 a. m.	6	.50	N.....6	....do	Ther. lowest last night, 5°.
	m.	12	.53	N 6	... do	
	7 p. m.	9	.54	NW 5	Few clouds .	Aurora.
Do...	14, 7 a. m.	9	.56	N... 1	Cloudy	Ther. lowest last night, 5°.
	m.	15	.50	S 1	... do	
	7 p. m.	14	.37	SE..... ..3	Few clouds .	Aurora.
Do.....	15, 7 a. m.	31	29.90	SSW 5	Overcast....	Ther. lowest last night, 29°.
	m.	34	.85	S. by W 4	... do	
	7 p. m.	31	.82	SSW 5	....do	
Do...	16, 7 a. m.	21	30.05	NE 1	....do	Ther. lowest last night, 20°.
	m.	23	.12	W 3	....do	
	7 p. m.	20	.15	W 3	... do	
Do	17, 7 a. m.	20	.10	NNW 2	....do	Snow; ther. lowest last night, 16°.
	m.	24	.07	NW 1	....do	
	7 p. m.	6	.02	NW 1	Clear	Aurora.
Do.....	18, 7 a. m.	30	29.60	SE..... .. 8	Overcast...	Snow; ther. lowest last night, 4°.
	m.	30	.57	SE..... 8	... do	Snow.
	7 p. m.	29	.58	SE 8	... do	Snow.
Do.....	19, 7 a. m.	26	.75	E 5	....do	Ther. lowest last night, 26°.
	m.	29	.80	E 4	Cloudy	
	7 p. m.	25	.85	ENE 3	Overcast....	
Do.... .	20, 7 a. m.	20	.90	NNW 8	.. do	Snow and drift; ther. lowest last night, 20°.
	m.	22	.90	NNW 10	....do	Snow and drift.
	7 p. m.	19	.88	NNW 10	. do	Snow and drift.
Do.....	21, 7 a. m.	20	.80	NNW 10	...do	Snow and drift; ther. lowest last night, 20°.
	m.	24	.79	NNW 10	....do	Snow and drift.
	7 p. m.	22	.88	NNW 10	....do	Snow and drift.
Do.....	22, 7 a. m.	21	30.12	NNW 10	....do	Drift; ther. lowest last night, 20°.
	m.	20	.20	NNW 10	....do	Drift.
	7 p. m.	20	.24	NNW 10	....do	Drift.

OCTOBER, 1865.

Locality.	Date.	Ther. 3.	Bar.	Wind.	Sky.	Remarks.
	1865.	°	*In.*			
26th Enc't, Fort Hope.	Oct. 23, 7 a. m.	3	30.40	NNW 11	Overcast...	Drift; ther. lowest last night, 3°.
	m.	5	.44	NNW 11	..do	Drift.
Lat. 66° 31′ N.	7 p. m.	4	.48	NNW 11	....do	Drift.
Long. 86° 56′ W.	24, 7 a. m.	10	.56	NNW 11	....do	Drift; ther. lowest last night, 5°.
	m.	18	.58	NNW 11	...do	Drift; perhaps snowing.
	7 p. m.	18	.72	NNW 11	...do	Drift.
Do.....	25, 7 a. m.	18	.80	NW 8	Clear	Drift; ther. lowest last night, 18°.
	m.	23	.82	NW 9	.. do	Drift.
	7 p. m.	17	.85	WNW.....8	....do	Drift.
Do.....	26, 7 a. m.	30	.67	W 1	Cloudy	
	m.	29	.55	SE..... 1	....do	
	7 p. m.	26	.47	N 1	....do	
Do.....	27, 7 a. m.	23	.30	NNW 8	Few clouds .	Drift; ther. lowest last night, 23°.
	m.	25	.28	NNW 9	....do	Drift.
	7 p. m.	20	.24	NNW 8	....do	Drift; discovered that ther. No. 3 had air in the bulb.

Locality.	Date.	Thermometers. 3.	4.	5.	6.	9.	Bar.	Wind.	Sky.	Remarks.
	1865.	°	°	°	°	°	*In.*			
26th Encampment, Fort Hope.	Oct. 28, 7 a. m.	20					30.14	NW 6	Few clouds.	Drift; ther. lowest last night, 20°.
	m.	22.5	—7.5	—9	—12	—8	.14	NNW 9	Clear	Drift.
	7 p. m.	21.5	—10.3	—11	—14	—10.5	.12	NW 5	..do	Drift.
Long. 86°56′ W. Lat. 66°31′ N.	29, 7 a. m.	23	—9	—11	—14	—10	.10	NW 5	Cloudy	Ther's: lowest last night: 3, 22°; 4, —12°.5; 5, —12°; 6, —16°; —9, 12°.
	m.	23.5	—6.5	—8	—10	—7	.06	NNW 9	... do	Drift.
	7 p. m.	21.5	—10.5	—12	—14.5	—11	.07	NNW 8	Few clouds.	Drift.
Do	30, 7 a. m.	24	—8	—9	—12	—8.5	.00	NNW 5	... do	Ther's: lowest last night: 3, 21°; 4, —11°.5; 5, —12°; [6, —15°.5; 9, —12°.
	m.	24	.....	—7	.....	.....	29.98	NW 4	... do	
	7 p. m.	17.5	—15	—18	—22	—17	.97	NW 1	Clear	Aurora.
Do	31, 7 a. m.	22	—14	—14.5	—14	—18	.96	W 3	Cloudy	Ther's: lowest last night: 3, —18°; 4, —19°; 5, —19°.5; [6, —18°; 9, —22°.
	m.	22	—12	—11	—16	—12	.98	W 2	... do	
	7 p. m.	20	—14.5	—14.5	—18.5	—15	.98	W 2	Few clouds.	
Do....	Nov. 1, 7 a. m.	21	—14	—14	—18	—14	30.00	W. by N 2	Cloudy	Ther's: lowest last night: 3, 17°; 4, —20°; 5, —19°.5; [6, —24°; 9, —13°.
	m.	.....	.....	—12	.....	.....	.00	W 2	..do	
	7 p. m.	24	—12	—12	—15	—11	.00	W 3	Few clouds.	
Do	2, 7 a. m.	26	—6	—6	—9	—6	.03	W 2	Overcast....	Ther's: lowest last night: 3, 22°; 4, —12°; 5, —12°.5; [6, —16°; 9, —12°.
	m.	27	—3	—3.5	—6	—3	.04	W. by S.... 2	... do	
	7 p. m.	27.5	—2	—2.5	—5.5	—2	.06	W 2	.. do	
Do.....	3, 7 a. m.	26	—2	—2	—5	—2	.20	W. by N ... 3	.. do	Ther's: lowest last night: 3, 25°; 4, —4°; 5, —4°; [6, —7°; 9, —4°.
	m.	27	—0.5	—1	—3.5	—0	.24	NW 4	do	
	7 p. m.	20	—10	—10	—14	—10	.24	NW 3	Cloudy	
Do ..	4, 7 a. m.	18	—16	—16	—19	—16	.27	NW 5	Overcast....	Ther's: lowest last night: 4, —16°; 5, —20°.
	m.	22	—11.5	—12	—16	—12	.30	NW 6	.. do	Drift.
	7 p. m.	19	—14.5	—14.5	—18	—15	.34	NNW 4	Cloudy	
Do	5, 7 a. m.	22	—12	—12	—16	—12	.44	NNW 6	.. do	Drift; ther's: lowest last night: 3, 18°; 4, —16°;
	m.	23	—11	—11	—15	—11	.45	NNW 6	... do	Drift. [5, —16°; 6, —20°; 9, —16°.
	7 p. m.	21	—13	—13	—17	—13	.44	NNW 3	Clear	Aurora.
Do.... ...	6, 7 a. m.	23	—12	—12	—16	—12	.20	Calm	Cloudy	Ther's: lowest last night: 3, 18°; 4, —16°; 5, —16°;
	m.	.....	.....	—2	.....	.....	.10	WNW 2	Overcast....	[6, —20°; 9, —16°.
	7 p. m.	26	—4	—4	—7	—4	.08	W. by N 5	... do	
Do.... ...	7, 7 a. m.	.....	—10	—10	—15	—10	.10	N. by W 6	Few clouds.	Ther's: lowest last night: 3, 20°; 4, —12°; 5, —12°;
	m.	.....	—7	—7	—10	—6.5	.30	N. by W 4	... do	[6, —17°; 9, —12°.
	7 p. m.	22	—12	—12.5	—16	—12	.60	NW 1	Clear	Aurora.
Do	8, 7 a. m.	.....	.....	0	.....	.....	.71	S. by W.....2	Overcast....	Ther's: lowest last night: 3, 18°; 4, —14°; 5, —15°;
	m.	32	8	8	6	8	.75	S. by W.....2	Cloudy	[6, —18°; 9, —15°.
	7 p. m.	28	6.5	6	4	6	.78	S 3	.....	Hazy.
Do ...	9, 7 a. m.	34	14	13.5	11	14	.76	S. by E..... 6	Overcast....	Snow; ther's: lowest last night: 3, 29°; 4, 6°; 5, 6°; 6, 5°; 9, 5°.
	m.	.....	.....	15	.....	.....	.79	S. by E.....7	....do	Snow.
	7 p. m.	22	—2	—2	—4	—2	.79	S 5	Few clouds.	
Do	10, 7 a. m.	15	—17	—17.5	—20.5	—15.5	.92	W. by N ... 3	do	Ther's: lowest last night: 3, 13°; 4, —20°; 5, —20°;
	m.	8	—13	—13	—17.5	—14	.95	NW 2	Cloudy	[6, —24°; 9, —18°.
	7 p. m.	13	—16	—16	—20	—16	.93	NE 1	Few clouds.	Aurora.
	Inigloo, 11.30 a.m.	36	27	25	24	26	.....	.....	.....	

Locality.	Date.	Thermometers. 3.	4.	5.	6.	9.	Bar.	Wind.	Sky.	Remarks.
	1865.	°	°	°	°	°	*In.*			
26th Encampment, Fort Hope.	Nov. 11, 7 a. m.	25	— 4	— 4.5	— 7.5	— 4.5	30.66	E 4	Overcast	Ther's: lowest last night: 3, 13°.5; 4, —20°; 5, —20°; 6, —24°; 9, —20°.
	m.	30	5.5	4.5	2	5	.81	E 10	.....	Snow and drift.
Lat. 66° 31′ N.	7 p. m.	32	9	8	6.5	9	.08	E 11	.....	Snow add drift.
Lon. 86° 56′ W.	12, 7 a. m.	34	17	16	15	16	29.84	E 1	.....	Fog; ther's: lowest last night: 3, 31°; 4, 9°.5; 5, 9°.5; [6, 7°; 9, 9°.
	m.	34	18	17	15	17.5	.81	Calm	.....	Fog.
	7 p. m.	32	16	12	12.5	15	.81	E. by N 1	.....	Fog.
Do.....	13, 7 a. m.	31	14	13	11.5	14	.77	Calm	Overcast...	Ther's: lowest last night; 3, 31°; 4, 14°; 5, 13°; 6, 11°.5; [9, 14°.
	m.	32	15.5	14	12.5	15	.73	Calm	....do	
	7 p. m.	33	16	16	14	16	.70	Calm	....do	
Do.....	14, 7 a. m.	31	16.5	16	14	16	.65	NE 2	.....	Fog; ther's: lowest last night: 3, 31°; 4, 16°.5; 5, 16°; [6, 14°; 9, 16°.
	m.	33	18.5	17.5	15	17	.65	NNE 2	.....	Fog.
	7 p. m.	26	8.5	8	6	8	.66	NW 2	Few clouds	Aurora.
Do	15, 7 a. m.	27.5	9	8.5	6	6.5	.83	NW 3	Cloudy ...	Ther's: lowest last night: 3, 24°; 4, 5°; 5, 5°; 6, 2°; 9, 5°.
	m.	25	3	2	0	2.5	.86	NNW 2	Few clouds .	
	7 p. m.	25	2	2	0	2	.88	NNW 3	.. do	
Do.....	16, 9 a. m.	26	2.5	2	0	2	30.03	NNW 6	Cloudy	Ther's: lowest last night: 3, 23°.5; 4, 0°; 5, 0°; 6, —2°; [9, 0°.
	3 p. m.	25.5	2	1	— 1	1	.16	NNW 2	.. do	
	7 p. m.	29	6	5.5	3	6	.12	NW 1	Overcast...	
Do.....	17, 9 a. m.	28	6	5.5	3	6	.21	NW 2	Cloudy ...	Ther's: lowest last night: 3, 26°; 4, 3°; 5, 2°.5; 6, 0°; 9, 3°.
	3 p. m.	20.5	— 6	— 6	— 9	— 6	.30	NNW 7	do	Drift.
	7 p. m.	20.5	— 7	— 7	—10.5	— 7.5	.34	NW 3	Clear	
Do.....	18, 9 a. m.	19	—14	—14	—18	—14	.45	Calm	Cloudy ..	Fog; ther's: lowest last night: 3, 15°.5; 4, —18°; 5, —18°; 6, —22°; 9, —18°.
	3 p. m.	21	—12.5	—12	—16	—12.5	.46	SE 1	... do	Fog.
	7 p. m.	29	— 1.5	— 2	— 5	— 2	.46	SE 1	Overcast ..	
Do.....	19, 9 a. m.	31	4.5	4	1.5	4.5	.48	S. by E..... 4	.. do	Ther's: lowest last night: 3, 28°; 4, —2°; 5, —2°; 6, —5°; 9, —2°.
	3 p. m.	32.5	7.5	7	4.5	7	.37	SE 7	.. do	Drift.
	7 p. m.	33.5	9	8.5	6	9	.33	SE 9	.. do	Drift and snow.
Do.....	20, 9 a. m.	38	20	21	19	21	.16	SW 2	.. do	Ther's: lowest last night: 3, 34°; 4, 9°; 5, 8°; 6, 6°; 9, 8°.
	3 p. m.	28	7.5	6.5	4	6.5	.32	WNW..... 3	Few clouds	
	7 p. m.	30.5	9.5	8	6	9	.40	WNW 3	....	Hazy. In evening No. 3 thermometer was put in order by driving the air out of the bulb.
Do.....	21, 9 a. m.	0	1.5	1.5	— 2	1.5	.45	Calm	Cloudy ...	Ther's: lowest last night: 3, —4°; 4, —2°; 5, —2°.5; [6, —6°; 9, —2°.
	3 p. m.	10.5	13	12	10	12.5	.40	SE 4	Overcast...	
	7 p. m.	12.5	15	14	12	14.5	.21	SE 5	... do	
Do.....	22, 9 a. m.	24	27	26	24.5	26	29.95	WSW 3	... do	Misty; ther's: lowest last night: 3, 12°.5; 4, 15°; 5, 14°; [6, 12°; 9, 12°.5.
	3 p. m.	22	24	23	22	24	30.00	SW 3	.. do	
	7 p. m.	19.5	22	21	19.5	21	.02	SW 3	....do	No. 3 ther.: Found its column was broken near the top, and put in order.
Do.....	23, 9 a. m.	— 4.5	— 4	— 4	— 7	— 4	.06	NW 1	Cloudy	Ther's: lowest last night: 3, —4°.5; 4, —4°; 5, —4°; [6, —7°; 9, —4°.
	3 p. m.	— 5.5	— 5.5	— 6	— 8.5	— 5.5	.10	N 1	Few clouds .	
	7 p. m.	3	2	2	— 1	2	.....	E 1	Overcast....	

Locality.	Date.	Thermometers. 3.	4.	5.	6.	9.	Bar.	Wind.	Sky.	Remarks.
	1865.	°		°	°		*In.*			
26th Encampment, Fort Hope.	Nov. 24, 9 a. m.	— 1	— 2	— 2	— 5	— 2	30.35	WNW.....2	Cloudy . ..	Ther's: lowest last night: 3, —4°; 4, —6°; 5, —6°; 6, —9°;
	3 p. m.	5	4	4	1	4	.41	NW 1	.. do	[9, —5°.5.
	7 p. m.	2	2	1.5	— 1	2	.44	NW 2	...do	
Lat. 66° 31' N	25, 9 a. m.	4	4	3	1.5	4	.54	NNW.....1	do	Ther's: lowest last night: 3, —9°; 4, —10°; 5, —10°;
Long. 86° 56' W.	3 p. m.	0	— 1	— 1	— 4	— 1	.62	NW 3	Few clouds .	[6, —13°.5; 9, —10°.
	7 p. m.	— 2	— 3	— 2.5	— 6	— 3.5	.62	NW 1	do	Aurora.
Do.	26, 9 a. m.	— 1.5	— 1	— 2	— 5	— 2	.62	E 1	Overcast ...	Ther's: lowest last night: 3, —5°; 4, —6°; 5, —6°.5; 6, —9°; 9, —6°.
	3 p. m.	3	2	2	0	2	.55	SE 1	.. do	Snow.
	7 p. m.	7	6.5	6	4	6	.52	SE 2	....do	Snow.
Do . ..	27, 9 a. m.	0	— 1	— 1.5	— 4.5	— 1.5	.45	NNW.....7	.. do	Drift; ther's: lowest last night: 3, 0°; 4, —1°; 5, —1°.5; 6, —4°.5; 9, —1°.5.
	3 p. m.	—10	—11.5	—12	—15	—11.5	.50	NNW.....7	Few clouds	Drift.
	7 p. m.	—13	—14	—14	—18	—14.5	.58	NNW. . 7	do	Drift.
Do.	28, 9 a. m.	—25	—26	—26	—31	—26	.58	NW 6	Clear	Drift; ther's: lowest last night: 3, —25°; 4, —26°;
	3 p. m.	—28	—30	—30	—34	—29.5	.65	NW . .. 4	.. do	[5, —26°; 6, —31°; 9, —26°.
	7 p. m.	—30	—31.5	—32	—36	—31	.58	NW 3	.. do	
Do	29, 9 a. m.	—28	—29.5	—30	—33	—29	.36	NW 4	...do	Ther's: lowest last night: 3, —31°.5; 4, —33°; 5, —33°.5;
	3 p. m.	—34	—35	—35	—39.5	—34.5	.24	Calm	...do	6, —36°.5; 9, —32°. Hall remarks that he is particular
	7 p. m.	—33	—35	—35	—38.5	—34.5	.22	Calm	.. do	in recording the thermometers just as they stand.
Do	30, 9 a. m.	—20	—21	—21	—24	—20	.18	ESE 3	Cloudy ...	Ther's: lowest last night: 3, —34°.5; 4, —36°; 5, —36°;
	3 p. m.	—16.5	—18	—18	—22	—18	.20	SE 3	... do	[6, —40°; 9, —35°.5.
	7 p. m.	—11.5	—12.5	—12.5	—16.5	—12.5	.22	SE 4	... do	
Do . ..	Dec. 1, 9 a. m.	—15.5	—16	—16	—20.5	—16	.32	NE 1	.. do	Ther's: lowest last night: 3, —20°; 4, —21°; 5, —21°;
	3 p. m.	—13.5	—15	—15.5	—19.5	—15.5	.30	NE. by E ...3	.. do	[6, —24°; 9, —20°.
	7 p. m.	—11	—12.5	—12.5	—16	—12	.24	NE 2	do	Halos and parhelia with prismatic colors.
Do .	2, 9 a. m.	— 6.5	— 6	— 6	— 9.5	— 6	29.88	NE 6	Overcast ..	Hazy; halo about moon 45° in diameter.
	3 p. m.	— 3	— 4	— 4	— 7.5	— 4	.62	NNW 8	....do	Snow; ther's: lowest last night: 3, —11°.5; 4, —12°.5; 5, —13°; 6, —16°; 9, —12°
	7 p. m.	0	— 1	— 2	— 4.5	— 1	.54	NW 4	... do	Snow and drift.
Do. . ..	3, 9 a. m.	—26	—28	—28	—32	—26.5	.97	S 2	Clear	Ther's: lowest last night: 3, —26°; 4, —28°; 5, —28°;
	3 p. m.	—22	—24	—24	—28	—24	30.00	E 2	Cloudy	[6, —32°; 9, —26°.5.
	7 p. m.	—20	—22	—22	—25	—21	.02	E 3	do	Hazy; halo about moon.
Do	4, 9 a. m.	—19.5	—20	—20	—25	—22	29.88	NNE 1	Overcast....	Ther's: lowest last night: 3, —16°; 4, —17°.5; 5, —17°.5;
	3 p. m.	—27.5	—28.5	—30	—33	—28	.88	NW 2	Clear	[6, —20°.5; 9, —16°.5.
	9 p. m.	—32	—33	—34	—39.5	—34	.88	NW 2	.. do	
Do	5, 7 a. m.	.....	.....	—36	.....	.....	.....	.....	.. ..	Ther. lowest last night: No. 5, —38°.
On sledge journey to 27th Enc't.	9 a. m.	.....	.....	—35	.....	.....	30.10	NW 1	Few clouds	
*27th Enc't.	3 p. m.	.....	.....	—33	.....	....	.14	NNW 2	Clear	
	7 p. m.	.....	.....	—34	.....	....	.20	NNW 2	do	
Lat. 66° 30'.5 N.	6, 9 a. m.	.....	.....	—32	.....	....	.35	NW 3	Few clouds .	Ther. lowest last night: No. 5, —34°.
Long. 86° 22' W.	3 p. m.	.....	.....	—30	...	.....	.33	NNW 3	.. do	
	7 p. m.	...	.....	—28	.....	.....	.30	NNW 5	Clear	

Locality.	Date.	Thermometers. 3.	4.	5.	6.	9.	Bar.	Wind.	Sky.	Remarks.
	1865.	°	°	°	°	°	*In.*			
27th Enc't.	Dec. 7, 9 a. m.			—29	—32		30.22	NNW 9	Cloudy	Drift: ther's: lowest last night: 5, —29°; 6, —32°.
Lat. 66° 30′.5 N.	3 p. m.			—29	—32		.25	NNW 10	Clear	Drift.
Long. 86° 22′ W.	7 p. m.			—29	—32		.20	NNW 11	do	Drift.
Do	8, 9 a. m.			—29	—32		.36	NNW 3	Few clouds	Ther's: lowest last night: 5, —29°; 6, —32°.
	3 p. m.			—29.5	—32.5		.45	NNW 1	do	
	7 p. m.			—31	—35		.45	NNW 3	Clear	
Do	9, 9 a. m.			—31	—35		.40	NW 2	Few clouds	Ther's: lowest last night: 5, —33°.5; 6, —36°.5.
	3 p. m.			—30	—34		.36	NNW 3	Clear	
	7 p. m.			—31	—35		.33	NNW 7	do	
Do	10, 9 a. m.			—32	—36		.28	NNW 1	Few clouds	Fog; ther's: lowest last night: 5, —32°; 6, —36°.
	3 p. m.			—28	—32		.23	N. by W 1		Fog.
	7 p. m.			—26	—30		.20	N 9	Overcast	Drift.
Do	11, 9 a. m.			—27	—30.5		.40	NNW 6		Fog; ther's: lowest last night: 5, —28°.5; 6, —32°.
	3 p. m.			—26	—29.5		.44	NNW 4	Few clouds	Fog.
	7 p. m.			—30	—33		.52	NW 1	Clear	Snow fine as dust.
Do	12, 9 a. m.			—29	—32		.72	NW 1	Few clouds	Ther's: lowest last night: 5, —31°; 6, —34°.
	3 p. m.			—21	—24.5		.82	NNW 1	Clear	
	7 p. m.			—23	—27.5		.88	NNW 1	do	
Do	13, 9 a. m.			—12	—14		.81	NW 2	Cloudy	Ther's: lowest last night: 5, —24°; 6, —27°.
	3 p. m.			—18	—22		.74	NW 1		Hazy.
	7 p. m.			—21	—25		.60	NW 1	Clear	
Do	14, 9 a. m.			—18	—21		.35	NNW 3	Cloudy	Ther's: lowest last night: 5, —22°; 6, —25°.
	3 p. m.			— 9	—12		29.90	E 5	Overcast	Snow.
	7 p. m.			— 5	— 8		.88	ESE 2	Clear	
Do	15, 9 a. m.			—15	—18		.85	NE 5	Overcast	Ther's: lowest last night: 5, —15°; 6, —18°.
	3 p. m.			—16	—19		.91	NE 5	do	
	7 p. m.			—14	—17		.98	N 2	Cloudy	
Do	16, 9 a. m.			—29	—32.5		30.02	NNW 6	Few clouds	Ther's: lowest last night: 5, —29°; 6, —32°.5.
	3 p. m.			—30	—34		.15	NNW 5	Clear	
	7 p. m.			—32	—36		.18	NNW 3	do	
Do	17, 9 a. m.			—27.5	—31.5		.22	NNW 2	do	Thers: lowest last night: 5, —30°; 6, —34°.
	3 p. m.			—29	—33		.24	NNW 2	do	
	7 p. m.			—27	—31		.24	NNW 3	do	
Do	18, 9 a. m.			—29	—33		.17	NNW 2	Cloudy	Ther's: lowest last night: 5, —33°; 6, —37°.
	3 p. m.			—29	—33		.08	NNW 2	Few clouds	
	7 p. m.			—28	—32		.02	NNW 2		Hazy.
Do	19, 9 a. m.			—29	—33		29.98	NNW 4	Overcast	Ther's: lowest last night: 5, —29°; 6, —33°.
	3 p. m.			—29.5	—33.5		.96	NNW 5		Hazy.
	7 p. m.			—30	—34		.92	NNW 7	Few clouds	
Do	20, 9 a. m.			—34	—38		.90	NNW 10	Cloudy	Drift; ther's: lowest last night: 5, —34°; 6, —38°.
	3 p. m.			—33	—37		.87	NNW 10	do	Drift.
	7 p. m.			—29	—33		.85	NNW 10	Clear	Drift.
Do	21, 9 a. m.			—33	—37		.86	NNW 10	Overcast	Drift; ther's: lowest last night: 5, —33°; 6, 37°.
	3 p. m.			—32	—36		.92	NNW 9	do	Drift.
	7 p. m.			—33	—37		.94	NNW 10	do	Drift.

Locality.	Date.	Thermometers. 3.	4.	5.	6.	9.	Bar.	Wind.	Sky.	Remarks.
	1865.	°	°	°	°	°	*In.*			
27th Enc't.	Dec. 22, 9 a. m.	..	.....	—41.5	—45	....	. ....	NNW 1	Few clouds	Ther's: lowest last night: 5, —37°.5; 6, —41°.5.
Lat. 66° 30'.5 N.	3 p. m.	....	...	—39	—43	... .	.	NNW 1	Clear	Mercury frozen all day.
Long. 86° 22' W.	7 p. m.	....	...	—37	—41	...	.	NNW 2	....do	Aurora.
Do	23, 9 a. m.	.. ..	...	—34	—38	.....	29.77	NNW 2	Cloudy . .	Ther's: lowest last night: 5, —42°; 6, —46°.
	3 p. m.	....	.....	—31	—35	....	.74	NNW 2	Few clouds .	Mercury frozen up to 3 p m.
	7 p. m.	.....	....	—30	—33.5	. ..	.70	NNW 3	Cloudy	
Do.	24, 9 a. m.	... .	....	—38	—42	.....	.80	NNW 8	Clear	Drift; ther's: lowest last night: 5, —38°; 6, —42°.
	3 p. m.	.....	.....	—40	—44	.....	.91	NNW ... 9	....do	Drift; mercury frozen all day.
	7 p. m.	.. ..	...	—38	—42	.....	.95	NNW . . 10	....do	Drift.
Do	25, 9 a. m.	.....	.....	—38	—42	.....	30.14	NNW .. . 1	... do	Ther's: lowest last night: 5, —42°; 6, —46°.
	3 p. m.	.....	.....	—32	—36	..	.10	NW 1	Cloudy	
	7 p. m.	....	.....	—30	—34		.00	NW 1	... do	
Do.	26, 9 a. m.	.....	....	—29	—33	.....	.28	NW 2	....	Ther's: lowest last night; 5, —33°; 6, —37°.
	3 p. m.	.....	...	—32	—36	.....	.48	NW 2	.....	
	7 p. m.	.....	.....	—36	—41	.....	.54	NW 3	Clear	Halo about moon.
Do	27, 9 a. m.	.....	....	—38	—42	....	.70	NNW .. . 1	... do	Ther's: lowest last night: 5, —38°; 6, —42°.
	3 p. m.	.....	....	—41	—45	..	.60	NNW 2	Cloudy ...	
	7 p. m.	.....	.....	—41	—45	.	.30	NNW .. . 1	.. do	
Do.... ...	28. 9 a. m.	...	.....	—33	—37		.30	NNW .. . 1	do	Ther's: lowest last night: 5, —41°; 6, —45°.
	3 p. m.	....	.....	—34	—38	.....	.00	NNW .. . 2	Overcast...	
	7 p. m.	.....	.....	—34	—38	...	29.91	NNW .. . 1	.. do	Mercury frozen.
Do.....	29, 9 a. m.	.....	.....	—14	—18	..	.45	S 7	... do	
	3 p. m.	.....	.....	—20	—24	.....	.52	W 6	.. do	Ther's: lowest last night: 5, —34°; 6, —38°.
	7 p. m.	.....	....	—24	—28	.....	.58	W 6	. ....	Hazy.
Do.... ...	30, 9 a. m.	.....	....	—36	—40	.....	.89	W 5	Cloudy	Fog.
	3 p. m.	.....	.....	—38	—42	....	30.02	WNW.....3	... do	Ther's: lowest last night: 5, —36°; 6, —40°.
	7 p. m.	... .	....	—38	—42	.....	.02	WNW.....2	Clear	Mercury frozen all day.
Do.... ...	31, 9 a. m.	.....	.....	—41	—45	.....	.20	NNW .. . 2	Few clouds .	Ther's: lowest last night: 5, —41°; 6, —45°.
	3 p. m.	.....	.....	—40	—44	.....	.20	NNW 2	do	
	7 p. m.	.....	.....	—42	—46	.....	.20	NW 1	Clear	Halo around moon.
		3.	5.	6.	7.	9.				
	1866.									
Do.....	Jan. 1, 9 a. m.	.....	—38	—42	....	..	30.20	NE 2	Overcast ..	Snow; ther's: lowest last night: 5, —38°; 6, —42°.
	3 p. m.	.. ..	—34	—38	....	.....	.15	E 1	Cloudy ...	
	7 p. m.	.....	—37	—41	....	... ..	.00	NNW 1	Clear	
Do.....	2, 9 a. m.	.....	—38	—42	....	.....	.06	NNW 5	Cloudy	Ther's: lowest last night: 5, —42°; 6, —46°.
	3 p. m.	.....	—38	—42	.....	. ...	.05	NNW 7	Clear	Drift; aurora.
	7 p. m.	.....	—37	—41	....	... ..	.08	NNW 7	.....	Drift; hazy.
Do..	3, 9 a. m.	.....	—41	—45	.....	.....	.30	NNW 9	Cloudy	Drift; ther's: lowest last night: 5, —41°; 6, —45°.
	3 p. m.	.....	—42	—46	.....	.....	.40	NNW 7	Clear	Drift.
	7 p. m.	.....	—42	—46	.....	.....	.45	NNW 1	... do	
Do...	4, 9 a. m.	.....	—42	—46	.....	.....	.40	NW 1	Few clouds .	Ther's: lowest last night: 5, —42°; 6, —46°.
	3 p. m.	.....	—36	—40	.....	.....	.58	NNW 3	Clear	
	7 p. m.	.....	—36	—40	.....	.....	.65	NNW 5	....do	

Locality.	Date.	Thermometers. 3.	5.	6.	7.	9.	Bar.	Wind.	Sky.	Remarks.
	1866.	°	°	°	°	°	*In.*			
27th Enc't.	Jan. 5, 9 a. m.		—36	—40			30.70	NNW 7	Cloudy	Drift; ther's: lowest last night: 5, —41°; 6, —45°.
Lat. 66°30′.5 N.	3 p. m.		—30	—34			.76	NNW 5	Few clouds .	
Long. 86°22′ W.	7 p. m.		—28	—32			.80	NNW 5	Clear	
Do	6, 9 a. m.		—27	—31			.76	NW 1	Overcast...	Ther's: lowest last night: 5, —30°; 6, —34°.
	3 p. m.		—26	—30			.74	NW 1	... do	
	7 p. m.		—16	—20			.74	E 3	....do	
Do	7, 9 a. m.		— 2	— 4			.35	NW 1	...do	Snow; ther's: lowest last night: 5, —17°; 6, —21°.
	3 p. m.		— 4	— 6.5			.31	NNW 2	... do	Snow.
	7 p. m.		— 7	—10			.30	NNW 4	....do	Snow.
Do	8, 9 a. m.		—20	—24			.44	NW 3	Cloudy ...	Ther's: lowest last night: 5, —20°; 6, —24°.
	3 p. m.		—24	—28			.38	NNW 5	Overcast ..	
	7 p. m.		—24	—28			.35	NNW 5	.. do ..	
Do	9, 9 a. m.		—38	—42			.32	NNW 8	Cloudy ..	Drift; ther's: lowest last night: 5, —38°; 6, —42°.
	3 a. m.		—36	—40			.40	NNW 10	.. do	Drift.
	7 p. m.		—36	—40			.42	NNW 10	Few clouds	Drift.
Do.....	10, 9 a. m.		—26	—30			.48	NNW 10	Overcast ..	Drift; ther's: lowest last night, 5, —36°; 6, —40°.
	3 p. m.		—24	—28			.50	NNW 10	....do .	Drift.
Do	11, 9 a. m.		—30	—34			.60	N 7	Few clouds	Drift; ther's: lowest last night: 5, —30°; 6, —34°.
	3 p. m.		—30	—34			.65	N 7	... do	Drift.
	7 p. m.		—30	—34			.72	N 7	Clear	Drift.
Do	12, 9 a. m.		—29	—33			.72	NNW 2	.. do	Ther's: lowest last night: 5, —30°; 6, —34°.
	3 p. m.		—28	—32			.66	NW 1	.. do	
	7 p. m.		—26	—30			.62	NW 1	.. do	
Do	13, 9 a. m.		—12	—16			.42	NW 2	Overcast ...	Ther's: lowest last night: 5, —28°; 6, —32°.
	3 p. m.		—12	—16			.35	NW 1	.. do	
	7 p. m.		—10	—13.5			.35	Calm	....do	Snow.
Do.....	14, 9 a. m.		—10	—13.5			.30	Calm	....do	Ther's: lowest last night: 5, —10°; 6, —13.5°.
	3 p. m.		— 9	—13			.33	N 1	....do	
	7 p. m.		— 9	—13			.33	NNE 1	do	
Do	15, 9 a. m.		—15	—19			.34	NNW 1	Cloudy	Ther's: lowest last night: 5, —15°; 6, —19°.
	3 p. m.		—25	—29			.48	NNW 1	Few clouds	
	7 p. m.		—23	—27			.52	NNW 1	do	
Do	16, 9 a. m.		—19	—23			.62	NW 1	Overcast ...	Ther's: lowest last night: 5, —22°; 6, —26°.
	3 p. m.		—14	—18			.60	NNW 1	Few clouds	Fine snow.
	7 p. m.		—12	—16			.60	NE 3	.. do	
Do.....	17, 9 a. m.		—11	—15			.45	NE 5	Overcast...	Snow and drift; ther's: lowest last night: 5, —12°;
	3 p. m.		—10	—14			.42	NE 7	... .	Snow and drift. {6, —16°.
	7 p. m.		—10	—14			.38	NE 9	....	Snow and drift.
Do	18, 9 a. m.		— 8	—12			.30	NE 10	.....	Snow and drift; ther's: lowest last night: 5, —10°;
	3 p. m.		— 5	— 9			.23	ENE 10	. .....	Snow and drift. {6, —14°.
	7 p. m.		0	— 4			.21	ENE 10	.. ..	Snow and drift.
Do.....	19, 9 a. m.		3	0						Ther's: lowest last night: 5, 0°; 6, —4°.
	3 p. m.		2.5	— 0.5						
	7 p. m.		2.5	— 0.5						

Locality.	Date.	Thermometers. 3.	5.	6.	7.	9.	Bar.	Wind.	Sky.	Remarks.
	1866.	°	°	°	°	°	*In.*			
27th Enc't.	Jan. 21. 9 a. m.	....	— 9	—11	..	.. ..	30.10	N 7	Overcast ..	Drift; ther's: lowest last night: 5, —9°; 6, —11°.
Lat. 66° 30'.5 N.	3 p. m.	.....	—10	—13.5	.....	...	.00	NNW ... 11	....	Drift.
Long. 86° 22' W.	7 p. m.	..	—10	—13.5	..	.... .	29.98	NNW .. 10	.. .	Drift.
Do ..	22. 9 a. m.	....	—18	—22	....	...	.72	NNW .. 12	. . ..	Drift; ther's: lowest last night: 5, —19°; 6, —23°.
	3 p. m.	.	—17	—21	....	.....	.72	NW 12	. .	Drift.
	7 p. m.	.	—18	—22	.....	.....	.80	NW 12	..	Drift.
Do	23. 9 a. m.		—19	—23	....	....	.95	NW . 6	Few clouds	Drift; ther's: lowest last night: 5, —21°; 6, —25°.
	3 p. m.	.	—16	—20	.. .	...	30.00	NNW ... 1	....do	
	7 p. m.	..	—16	—20	....	.....	29.98	NNW . . . 1	Cloudy ...	
Do . ..	24. 9 a. m.	...	—25	—29	.....	....	30.18	NW 2	Few clouds	Ther's: lowest last night: 5, —25°; 6, —29°.
	3 p. m.	.	—26	—30	.....	.....	.22	NW 1	Clear	
	7 p. m.	.....	—31	—35	....	....	.35	NW . . 1	. do	
Do.....	25. 9 a. m.	...	—29	—33	....	.....	.44	NNW 2	Few clouds	Ther's: lowest last night: 5, —31°; 6, —35°.
	3 p. m.	...	—16	—20	.....	....	.40	E . . . 3	Cloudy . .	
	7 p. m.	. .	—12	—16	....	...	.36	E .. 3	Overcast ..	
Do.....	26. 9 a. m.	....	— 4	— 7	....	...	.20	ESE 1	. do	Ther's: lowest last night: 5, —12°; 6, —16°.
	3 p. m.	.....	0	— 3	....	...	.17	ESE 2	.. do	
	7 p. m.		1	— 2	...	....	.04	ESE 4	... do	
Do.....	27. 9 a. m.	.	5	2	....	....	.04	E 3	. do	Snow; ther's: lowest last night: 5, 1°; 6, —2°.
	3 p. m.	..	9	6	..	.....	29.82	E 2	... do	At noon, ther's: 5, 9°; 6, 6°.
	7 p. m.	....	7	4	....	.....	.74	N 2	.. do	
Do	28. 9 a. m.	....	—10	—14	.....	..	30.10	NW 2	Cloudy	Ther's: lowest last night: 5, —10°; 6, —14°.
	3 p. m.	....	— 9	—12	...	.....	.18	NNW 6	. do	Drift.
	7 p. m.	....	— 9	—12	....	..	.28	NNW ... 6	do	Drift.
Do	29. 9 a. m.	...	—26	—30	. .	...	.61	NNW 7	Few clouds	Drift; ther's: lowest last night: 5, —26°; 6, —30°.
28th Enc't.	3 p. m.	....	—30	—34	.....	...	.66	NNW . 7	.. do	Drift.
Lat. 66° 30½' N.	7 p. m.	.....	—31	—35	.....	.....	.70	NNW 7	. do	Drift.
Long. 86° 23' W.	30. 9 a. m.	...	—33	—37	.	....	.80	NNW . . 8	do	Drift; ther's: lowest last night: 5, —34°; 6, —38°.
	3 p. m.	....	—32	—36	.....	.....	.77	NNW ... 7	Cloudy	Drift.
	7 p. m.	. .	—32	—36	.....	.....	.76	NNW 7	. do	Drift.
Do .	31. 9 a. m.	.....	—32	—36	....	.....	.70	NNW ... 7	Few clouds	Drift; ther's: lowest last night: 5, —34° ; 6, —38°.
	3 p. m.	.....	—31	—35	....	.....	.75	NNW 6	Cloudy	Drift.
	7 p. m.		—30	—34	.....	.....	.66	NNW 6	....	Drift; hazy; halo around moon.
Do	Feb 1. 9 a. m.	4.	—26	—30	.....	.. ..	.45	NNW .6	Cloudy ...	Drift; ther's: lowest last night: 5, —30°; 6, 34°.
	3 p. m.	——	—21	—25	.....	.. ..	.41	NNW . ..6	... do	Drift.
	7 p. m.	....	—18	—22	. .... .		.30	NNW . . 6	.. do	Drift.
Do ...	2. 9 a. m.	.	—26	—30	.....	....	.13	N ... 7	... do	Drift; fog: ther's: lowest last night: 5, —28°; 6, —30°.
	3 p. m.	....	—.8	—32	.....	.....	.11	NNW 5	.. do	
	7 p. m.		—32	—36	....	.. ..	.10	NNW ..4	Clear ...	
Made on jour-	3. 9 a. m.	. .		—40	.....	...	.00	NNW ...1	... do	Parasclenæ; ther's: lowest last night: 5, —37°; 6, —41°.
ney to 22d	3 p. m.		.	—30	.....	...	.. .	NNW 2	Few clouds	
Enc't.	7 p. m	.....			.....	. .	. ...	Calm	Cloudy	At 4 p. m. broke No. 6 thermometer.
Lat. 66° 19' N.										
Long. 85° 29' W.										
*At 28th Enc't.	4. 9 a. m.	...	..	.....	.....	.....	.....	E 4	....do	Fog; ther's: lowest last night, No. 5, —40°.
Lat. 66° 30½' N.	3 p. m.	....	—30	....	.....	.....	29.99	NE 3	.. do	Fog.
Long. 86° 23' W.	7 p. m.	.....	—38	.....	.....	.....	.98	N.... 3	.. do	Fog.

Locality.	Date.	Thermometers. 4.	5.	6.	7.	9.	Bar.	Wind.	Sky.	Remarks.
	1866.	°	°	°	°	°	*In.*			
28th Enc't.	Feb. 5, 9 a. m.		—39				30.00	NNW 1	Few clouds	Ther. lowest last night, No. 5, —40°.
Lat. 66°30½′ N.	3 p. m.		—36				.00	NNW 1	do	
Long. 86°23′ W.	7 p. m.		—40				.00	NNW 1	Clear	
Do	6, 9 a. m.	—36	—38				29.84	NW 1	Cloudy	Hazy; halo around sun; ther's: lowest last night: 4, —40°; 5, —42°.
	3 p. m.	—32	—34				.80	Calm	do	Hazy.
	7 p. m.	—34	—36				.74	Calm		Hazy; aurora.
Do	7, 9 a. m.	—36	—38				.70	Calm	Clear	Ther's: lowest last night: 4, —40°; 5, —42°.
	3 p. m.	—32	—34				.64	Calm	do	
	7 p. m.	—40	—42				.62	NNW 1	do	Aurora.
On journey to	8, 9 a. m.	—24	—26				.54	SSW 2	Cloudy	Fog; ther's: lowest last night: 4, —40°; 5, —42°.
29th Enc't.	3 p. m.	—20	—22				.44	S 4	do	Fog.
29th Enc't.	7 p. m.	—22	—24				.25	S 4	do	Fog.
(Same as 26th)	9, 9 a. m.		— 4				.22	SE 2		Ther. lowest last night, No. 5, —24°.
Lat. 66°31′ N.	3 p. m.		—10				.18	N 3		
Long 86°56′ W.	7 p. m.		—23				.00	NNW 7		
Do	10, 9 a. m.		—36				28.96	NNW 12		Snow-drift; ther. lowest last night, —44°.
	3 p. m.		—34				.84	NNW 12		Snow-drift.
	7 p. m.		—36				.82	NNW 12		Snow-drift.
Do	11, 9 a. m.		—34				.97	NNW 8	Cloudy	Drift; ther. lowest last night, —36°.
	3 p. m.		—30				29.00	NNW 7	do	Drift.
	7 p. m.		—30				.04	NNW 7	Few clouds	Drift; aurora.
Do	12, 9 a. m.		—34				.37	NNW 3	do	Ther. lowest last night, —38°.
	3 p. m.		—30				.50	NNW 1	Clear	
	7 p. m.		—38				.60	NNW 1	do	
Do	13, 9 a. m.		—36				.70	NW 3	Overcast	Ther. lowest last night, —40°.
	3 p. m.		—32				.70	NNW 5	Cloudy	
	7 p. m.		—34				.70	NNW 6	Few clouds	
Do	14, 9 a. m.		—40				.50	NNW 7	do	Drift; ther. lowest last night, —40°.
	3 p. m.		—40				.58	NNW 7	do	Drift.
	7 p. m.		—42				.30	NNW 7	do	Drift; aurora.
Do	15, 9 a. m.		—42				.10	NNW 8	Clear	Drift; ther. lowest last night, —44°.
	3 p. m.		—42				28.90	NNW 8	do	Drift.
	7 p. m.		—44				.74	NNW 8	do	Drift.
Do	16, 9 a. m.		—38				.22	NNW 6	Few clouds	Fog; ther. lowest last night, —44°.
	3 p. m.		—32				.00	NNW 8	do	Drift.
	7 p. m.		—34				27.80	NNW 8	do	Drift.
Do	17, 9 a. m.		—38				.68	NNW 2	do	Fog; ther. lowest last night, —40°.
	3 p. m.		—24				.66	SSE 3	do	Fog.
	7 p. m.		—25				.63	SSE 3		Fog; snow.
Do	18, 9 a. m.		—32				.85	NW 2	Few clouds	Fog; ther. lowest last night, —34°.
	3 p. m.		—33				.92	NNW 1	do	Halo around sun.
	7 p. m.		—38				.98	NNW 2	Clear	
Do	19, 9 a. m.		—38				28.22	NNW 7	Few clouds	Drift; ther. lowest last night, —38°.
	3 p. m.		—34				.33	NNW 7	do	Drift.
	7 p. m.		—37				.30	NNW 7	Clear	Drift.

February, 1866.

Locality.	Date.	Thermometers. 4.	5.	6.	7.	9.	Bar.	Wind.	Sky.	Remarks.
	1866.	°	°	°	°	°	*In.*			
29th Exc't.	Feb. 20, 9 a. m.		—10				28.25	NW ... 2	Clear	Ther. lowest last night, —43°.
(Same as 26th.)	3 p. m.		—32				.15	Calm	Cloudy	Halo round sun.
Lat. 66° 31′ N.	7 p. m.		—42				.10	NNW ... 1		Hazy.
Long. 88° 56′ W.	21, 9 a. m.		—46				27.80	Calm	Few clouds	Ther. lowest last night, —48°.
	3 p. m.		—22				.72	SE ... 3	Overcast	Snow.
	7 p. m.		—19				.65	SSE ... 4	Cloudy	
Do	22, 9 a. m.		—45				.53	NNW ... 7	do	Drift; ther. lowest last night, —48°.
	3 p. m.		—44				.43	NNW ... 2	Few clouds	
	7 p. m.		—42				.47	NW ... 1	Clear	
Do	23, 9 a. m.		—23				.50	E ... 7	Cloudy	Drift; ther. lowest last night, —43°.
	3 p. m.		—19				.52	NE ... 6	do	Snow.
	7 p. m.		—18				.55	NE ... 6	do	Snow.
Do	24, 9 a. m.		—16				.70	NE ... 3	do	Ther. lowest last night, —30°.
	3 p. m.		—26				.88	NNE ... 1	Few clouds	
	7 p. m.		—25				.83	N. by W ... 3		Hazy; halo about moon.
Do	25, 9 a. m.		—10				.50	NNW ... 8	Cloudy	Drift; ther. lowest last night, —25°.
	3 p. m.		— 4				.22	NNW ... 10		Drift; snow.
	7 p. m.		— 2				26.98	NNW ... 10		Drift; snow.
Do	26, 9 a. m.		— 6				.96	NNW ... 10		Drift; ther. lowest last night, —6°.
	3 p. m.		—10				.97	NW ... 7		Drift; snow.
	7 p. m.		—16				27.00	WNW ... 3		Hazy.
Do	27, 9 a. m.		—15				.26	WNW ... 2	Overcast	Ther. lowest last night, —25°.
	3 p. m.		—17				.35	WNW ... 3	Cloudy	
	7 p. m.		—21				.40	W. by N ... 3		Hazy.
Do	28, 9 a. m.		—23				.70	WNW ... 2	Cloudy	Ther. lowest last night, —23°.
	3 p. m.		—24				.84	WNW ... 2	do	
	7 p. m.		—32				.90	WNW ... 1	Few clouds	

MARCH, 1866.

Locality.	Date.	Ther. 5.	Bar.	Wind.	Sky.	Remarks.
	1866.	°	*In.*			
29th Enc't.	Mar. 1, 9 a. m.	— 36	28.00	WNW.....1	Few clouds	Ther. lowest last night, —36°.
(Same as 26th.)	3 p. m.	— 24	.04	WNW.....1	Clear	
Lat. 66° 31′ N.	7 p. m.	— 36	27.95	WNW.....1	....do	
Long. 86° 56′ W.	2, 9 a. m.	— 32	28.13	NNW.....1	....do	Ther. lowest last night, —35°.
Do	3 p. m.	— 17	.08	NW.....1	... do	
	7 p. m.	— 31	.00	NNW.....1	.. do	
Do	3, 9 a. m.	— 14	27.60	SSE.....4	Overcast	Ther. lowest last night, —37°.
	3 p. m.	— 12	.52	NW.....3	Cloudy	
	7 p. m.	— 10	.40	WNW.....5	Overcast	
Do	4, 9 a. m.	— 19	.53	NNW.....4	....do	Ther. lowest last night, —28°.
	3 p. m.	— 22	.58	NNW.....7	....do	Drift.
	7 p. m.	— 24	.60	NNW.....9	.. do	Drift.
Do	5, 9 a. m.	— 26	.70	NNW.....9	Few clouds	Drift; ther. lowest last night, —28°.
	3 p. m.	— 24	.78	NNW.....7	Clear	Drift.
	7 p. m.	— 24	.86	NNW.....7	....do	Drift; aurora.
Do	6, 9 a. m.	— 24	.94	NNW.....7	Few clouds	Drift; ther. lowest last night, —25°.
	3 p. m.	— 19	.94	NNW.....8	Clear	Drift.
	7 p. m.	— 19	.98	NNW.....7	....do	Drift.
Do	7, 9 a. m.	— 26	.98	NNW.....1	....do	Ther. lowest last night, —28°.
	3 p. m.	— 18	.61	Calm	Cloudy	
	7 p. m.	— 16	.42	NW.....1	... do	
Do	8, 9 a. m.	— 16	26.98	N.....2	... do	Ther. lowest last night, —16°.
	3 p. m.	— 6	.98	NNW.....4	Overcast	Snow.
	7 p. m.	— 10	.98	NW.....5	... do	Snow.
Do	9, 9 a. m.	— 20	.98	NW.....8	Few clouds	Drift; ther. lowest last night, —20°.
	3 p. m.	— 21	.98	NNW.....8	....do	Drift.
	7 p. m.	— 22	.98	NNW.....8	Cloudy	Drift.
Do	10, 9 a. m.	— 23	29.74	NNW.....5	Few clouds	Ther. lowest last night, —23°; *barometer* set at 29.74.
	3 p. m.	— 16	.76	NE.....2	Cloudy	
	7 p. m.	— 29	.84	NNE.....2	Clear	
Do	11, 9 a. m.	— 30	30.04	NNW.....4	Few clouds	Ther. lowest last night, —35°.
	3 p. m.	— 22	.02	NNW.....3	Clear	
	7 p. m.	— 24	29.82	NNW.....2	Few clouds	
Do	12, 9 a. m.	— 20	.64	NNW.....6	...do	Drift; ther. lowest last night, —24°.
	3 p. m.	— 12	.70	NNW.....2	.. do	
	7 p. m.	— 25	.70	NNW.....1	....do	
Do	13, 9 a. m.	— 27	.80	NNW.....2	Clear	Ther. lowest last night, —32°.
	3 p. m.	— 10	.88	NNW.....1	Few clouds	
	7 p. m.	— 30	.83	NW.....1	Clear	
Do	14, 9 a. m.	— 30	.66	NNW.....1	Few clouds	Ther. lowest last night, —35°.
	3 p. m.	— 10	.44	SE.....5	Overcast	Snow; at 7 p. m. No. 3 ther., —16°; No. 4 ther., —16°; No. 5 ther., —16°; No. 9 ther., —12°.
	7 p. m.	— 16	.36	NW.....3		Hazy; really aurora diffused throughout the heavens.
Do	15, 9 a. m.	— 30	.44	2	Few clouds	Ther. lowest last night, —36°.
	3 p. m.	— 19	.38	3	Cloudy	Fog; halos about sun.
	7 p. m.	— 25	.34	4	Overcast	
Do	16, 9 a. m.	— 30	.30	NNW.....1	Clear	Ther. lowest last night, —36°.
	3 p. m.	— 16	.35	Calm	Few clouds	
	7 p. m.	— 34	.44	E.....2	Clear	Aurora.
Do	17, 9 a. m.	— 34	.60	NW.....4	Few clouds	Ther. lowest last night, —38°.
	3 p. m.	— 23	.58	NNW.....8	Overcast	Drift.
	7 p. m.	— 20	.50	NNW.....9		Drift, snow.
Do	18, 9 a. m.	— 6	.34	NNW.....10		Drift, snow; ther. lowest last night, —20°.
	3 p. m.	16	.18	E.....10		Drift, snow.
	7 p. m.	16	.18	ENE.....7		Drift, snow.
Do	19, 9 a. m.	22	.34	ENE.....10		Snow and drift; ther. lowest last night, —10°.
	3 p. m.	25	.54	ENE.....10		Snow and drift.
	7 p. m.	20	.52	ENE.....6	Few clouds	Snow and drift; aurora.
Do	20, 9 a. m.	6	.78	NNW.....5	Cloudy	Drift; ther. lowest last night, 4°.
	3 p. m.	5	.83	NNW.....7	.. do	Drift.
	7 p. m.	5	.86	NNW.....7	Overcast	Drift.
Do	21, 9 a. m.	— 4	30.14	SSE	Clear	Ther. lowest last night, —6°.
	3 p. m.	— 5	.52	SE	....do	
	7 p. m.	— 12	.52	NW	....do	

MARCH—APRIL, 1866.

Locality.	Date.	Ther. 5.	Bar.	Wind.	Sky.	Remarks.
	1866.	°	*In.*			
29th Enc't.	Mar. 22, 9 a. m.	— 6	30.54	NNW 6	Few clouds .	Drift; ther. lowest last night, [—12°.
(Same as 26th.)	3 p. m.	— 4	.50	NNW 5	Cloudy	
Lat. 66° 31′ N.	7 p. m.	— 4	.47	NNW 3	Overcast	
Long. 86° 56′ W.	23, 9 a. m.	— 2	.36	NNW 1	Cloudy	Ther. lowest last night, —4°.
	3 p. m.	— 2	.08	NNW 1	.. do	
	7 p. m.	— 4	29.97	NNW 1	Overcast	
Do.	24, 9 a. m.	— 2	.88	NNW 1	.. do	Ther. lowest last night, - 4°.
	3 p. m.	6	.86	E 1	....do	
	7 p. m.	4	.84	NNE 1	....do	
Do	25, 9 a. m.	2	30.02	NNW 1	.. do	Ther. lowest last night, 0°.
	3 p. m.	10	.12	Calm	.. do	
	7 p. m.	4	.10	Calm	Cloudy	Fog.
Do	26, 9 a. m.	10	.12	NNW 4	Overcast	Ther. lowest last night, —2°.
	3 p. m.	— 2	.22	NNW 8	....do	Drift.
	7 p. m.	—10	.22	NNW 6	Few clouds	
Do...	27, 9 a. m.	—12	.22	NNW 5	.. do	Ther. lowest last night, —18°.
	3 p. m.	— 4	.22	NNW 6	....do	Drift.
	7 p. m.	—10	.20	NNW 3	do	
Do	28, 9 a. m.	—12	.10	NNW 2	Clear	Ther. lowest last night, —18°.
	3 p. m.	0	.00	SE 1	Few clouds	
	7 p. m.	—10	29.90	SE 1	Cloudy	
Do	29, 9 a. m.	0	.84	SSE 1	Overcast	Ther. lowest last night, —10°.
	3 p. m.	10	.57	SE.....3	.. do	Snow.
	7 p. m.	8	.50	ESE 4	.. do	Snow.
Do.....	30, 9 a. m.	— 4	.34	NNW 3	....do	Ther. lowest last night, —6°.
	3 p. m.	2	.42	N. by W .. 6	Cloudy	Drift.
	7 p. m.	—10	.60	NNW 7	... do	Drift.
Do	31, 9 a. m.	—20	.70	NNW 5	Few clouds	Ther. lowest last night, —20°.
30th Enc't.	3 p. m.	—17	.....	NNW 8	... do	Drift.
Lat. 66° 33′ N.	7 p. m.	—20	....	NNW 8	... do	Drift.
Long. 86° 56′ W.	Apr. 1, 9 a. m.	—13	.. ....	NNW 8	....	Ther. lowest last night, —24°.
	3 p m.	— 2	....	NNW 9	....	
	7 p. m.	— 5	.....	NNW 8	.....	
Do	2, 9 a. m.	0	.....	NNW 10	Overcast ...	Drift; ther. lowest last night, —2°.
	3 p. m.	2	.....	NNW 10	Cloudy	Drift.
	7 p. m.	— 1	.....	NNW ... 10	.. do	Drift.
Do....	3, 9 a. m.	— 2	... .	NW 1	do	Ther. lowest last night, —12°.
	3 p. m.	0	.. ....	NW 2	Few clouds .	
	7 p. m.	—10	.. ..	NNW 2	... do	
Do	4, 9 a. m.	—10	.....	NNW 1	Clear	Ther. lowest last night, —19°.
	3 p. m.	— 3	.....	NNW 1	.. do	
	7 p. m.	—10	.....	Calm	....do	
Do	5, 9 a. m.	10	. .....	E 1	Overcast ..	Snow; ther. lowest last night, —16°.
31st Enc't.	3 p. m.	13	.....	NW 6	Cloudy . ..	
Lat. 66° 40′ N.	7 p. m.	10	.....	NNW 4	.. do	
Long. 87° 4′.7 W.	6, 9 a. m.	— 6	.....	NNW 6	Few clouds	Drift; ther. lowest last night, —12°.
	3 p. m.	— 1	.....	NNW 7	....do	Drift.
	7 p. m.	— 7	.....	NNW 7	do	Drift.
Do	7, 9 a. m.	—10	.....	NNW 6	Cloudy	Drift; ther. lowest last night, [—16°.
	3 p. m.	— 5	.....	NNW 5	....do	
	7 p. m.	—13	.....	NNW 2	Clear	
Do .	8, 9 a. m.	—13	.....	NNW 1	Few clouds .	Ther. lowest last night, —22°.
32d Enc't.	3 p. m.	— 1	.....	NNW 1	Hazy	
Lat. 66° 47′ N.	7 p. m.	— 4	.. ....	SE 2	Overcast	
Long. 87° 16′.7 W.	9, 9 a. m.	4	.. ..	SE	...do	Snow; ther. lowest last night, —4°.
	3 p. m.	9	..	SE.....	....do	Snow; fog.
	7 p. m.	6	. ...	SE	...do	Snow; fog.
Do	10, 9 a. m.	— 2	... .	NNW 2	Cloudy	Fog; ther. lowest last night, —4°.
	3 p. m.	4	. .. ..	NNW 5	.. do	
	7 p. m.	— 7	.....	NNW 5	.. do	
Do	11, 9 a. m.	—12	.....	NNW ... 4	....do	Fog; ther. lowest last night, —16°.
33d Enc't.	3 p. m.	—12	. .. .	NNW 5	Few clouds	
Lat. 66° 56′ N.	7 p. m.	—15	.....	NNW 4	.. do	
Long. 87° 30′ W.	12, 9 a. m.	—18	.....	NNW 5	.. do ...	Ther. lowest last night, —25°.
	3 p. m.	—22	.....	NNW 4	Clear	
	7 p. m.	—20	.....	NNW	....do	
Do . ..	13, 9 a. m.	—18	.....	NNW 8	Cloudy	Drift; ther. lowest last night, —27°.
	3 p. m.	— 4	.....	NNW 9	....	Drift.
	7 p. m.	— 7	.... ..	NNW 10	.....	Drift.

APRIL–MAY, 1866.

Locality.	Date.	Ther. 5.	Bar.	Wind.	Sky.	Remarks.
	1866.	°	*In.*			
33d Enc't.	Apr. 14, 9 a. m.	18	.....	ESE ... 3	Overcast ..	Snow; ther. lowest last night, —10°.
Lat. 66° 56′ N.						
Long. 87° 30′ W.	3 p. m.	8	....	ESE 2	. do	Snow.
	7 p. m.	5	.....	ESE 2	do	
Do	15, 9 a. m.	— 8	.....	NNW 4	Few clouds .	Ther. lowest last night, —21°.
34th Enc't.	3 p. m.	2	.....	N 6	Cloudy	
Lat. 67° 4′ N.	7 p. m.	— 4	....	N 7	do	
Long. 87° 41′ W.	16, 9 a. m.	— 7	.....	N 2	Few clouds	Ther. lowest last night, —12°.
	3 p. m.	3	....	NW 2	do	
	7 p. m.	— 4	.....	NW 5	... do	
Do	17, 9 a. m.	— 6	.....	NW 5	Overcast .	Ther. lowest last night, —9°.
	3 p. m.	11	. ...	WNW..... 4	do	
	7 p. m.	4	.....	NW 6	Cloudy	
Do . .	18, 9 a. m.	4	....	NW 5	Few clouds	Ther. lowest last night, —4°.
	3 p. m.	7	.....	NW 2	do	
	7 p. m.	4	.....	WNW..... 3	Overcast ...	
Do	19, 9 a. m.	14	.....	NW 3	Cloudy	Ther. lowest last night, —5°.
35th Enc't.	3 p. m.	16	.....	NW 2	.. do	
Lat. 67° 14′ N.	7 p. m.	0	.....	NW 4	Overcast	
Long. 87° 31′ W.	20, 9 a. m.	..	.....	NNW 3	.....	
	3 p. m.	4	....	NW 2	... ...	
Do	21, 9 a. m.	— 3	.....	NW 2	Few clouds .	Ther. lowest last night, —12°.
36th Enc't.	3 p. m.	— 4	.....	NW 1	Clear . . .	
Lat. 67° 24′ N.	7 p. m.	—10	.....	Calm	.. do	
Long. 87° 41′ W.	22, 9 a. m.	7	.. ....	SE..... .. 2	Overcast ...	Ther. lowest last night, —14°.
	3 p. m.	12	.....	SE 3	Cloudy	
	7 p. m.	0	.....	W 3	....do	
Do	23, 9 a. m.	12	.....	SW 4	. do	Ther. lowest last night, —2°.
	3 p. m.	20	.....	SSW 3	... do	
	7 p. m	9	.....	SSW 3	. do	
Do	24, 9 a. m.	2	.....	NNW 2	.. do	Ther. lowest last night, 2°.
37th Enc't.	3 p. m.	1	.....	N 2	.. do	
Lat. 67° 37′ N.	7 p. m.	0	.....	N 1	.. do	
Long. 88° 8′ W.	25, 9 a. m.	6	.....	N 2	... do	Ther. lowest last night, —12°.
	3 p. m.	8	.....	N 3	.. do	
	7 p. m.	—12	.....	W 3	Few clouds	
Do	26, 9 a. m.	10	.....	W 3	Cloudy	Ther. lowest last night, —22°.
	3 p. m.	4	.....	SE 4	.. do	
	7 p. m.	—12	.. ....	SW 1	....do	
Do.	27, 9 a. m.	10	.....	NW 2	Overcast	Fog; ther. lowest last night, —12°.
	3 p. m.	8	.....	NW 4	.....	Fog; snow.
	7 p. m.	8	.....	NW 4	.....	Fog; snow.
Do.	28, 9 a. m.	— 4	.. ...	NW 6	Cloudy	Drift; ther. lowest last night, —7°.
	3 p. m.	0	.. ..	NW 8	...do	Drift.
	7 p. m.	—10	.. ..	.....	.....	
Do.....	29, 9 a. m.	—11	.. ...	NNW 6	Few clouds .	Drift; ther. lowest last night, —15°.
**38th Enc't.						
Lat. 67° 49′ N.	**3 p. m.	— 2	.....	NW 6	. do	Drift.
Long. 88° 25′ W.	7 p. m.	—10	.....	WNW.....5	Cloudy	Drift.
39th Enc't.	30, 9 a. m.	12	.....	NNW 3	Few clouds	Ther. lowest last night, —12°.
Lat. 67° 55′ N.	3 p. m.	2	.....	N 2	... do	
Long. 88° 23′ W.	7 p. m.	— 8	.....	NW 1	Cloudy	
*40th Enc't.						
Lat. 68° 00′ N.						
Long. 88° 19′ W.						
Do	May 1, 9 a. m.	10	.. ....	NW 3	Cloudy	Ther. lowest last night, —10°.
	3 p. m.	12	.....	W 4	Overcast	
	7 p. m.	8	.. ....	W 6	.....	Snow.
Do.	3, 9 a. m.	32	.. ...	E 2	Overcast	Ther. lowest last night, 20°.
	3 p. m.	34	.....	E 1	... do	
	7 p. m.	30	... ...	E 1	.. do	
Do	4, 9 a. m.	30	.....	NW 3	.. do	Snow; ther. lowest last night, 27°.
	3 p. m.	24	.....	W 2	Cloudy	
	7 p. m.	20	. ...	W 2	....do	
Do	5, 9 a. m.	20	.. ...	W 5	....do	Ther. lowest last night, 14°.
41st Enc't, same as 39th Enc't.	3 p. m.	30	.....	W 6	... do	
	7 p. m.	19	.....	W 4	....do	
Do	6, 9 a. m.	16	.....	W 5	Overcast ..	Ther. lowest last night, 12°.
	3 p. m.	21	.....	W 6	....do	Drift.
	7 p. m.	—14	.....	W 4	. do	
Do	7, 9 a. m.	14	. ...	S 4	Cloudy	Ther. lowest last night, 12°.
42d Enc't., same as 38th Enc't.	3 p. m.	20	.....	W 7	.. do	Drift, snow.
	7 p. m.	14	.....	W 6	....do	Drift.

MAY—JUNE, 1866.

Locality.	Date.	Ther. 5.	Bar.	Wind.	Sky.	Remarks.
	1866.	°	*In.*			
42d Enc't, same	May 8, 9 a. m.	14	.....	W 6	Cloudy	Ther. lowest last night, 11°.
as 38th Enc't.	*3 p. m.	36	.....	W 1	....do	
*43d Enc't.	7 p. m.	18	.....	SE 1	Overcast....	Snow.
Lat. 67° 40′ N.	9, 9 a. m.	10	.....	NNW 4	Cloudy	Ther. lowest last night, 3°.
Long. 88° 17′ W.	*3 p. m.	12	.....	N 5	Overcast....	Snow.
*44th Enc't.	7 p. m.	10	.....	N 7	....do	Drift.
Lat. 67° 32′ N.	10, 9 a. m.	14	.....	NW 7	....do	Drift; ther. lowest last night, 10°.
Long. 87° 53′ W.	3 p. m.	12	.....	NW 5	....do	
	7 p. m.	10	.....	NW 3	....do	
Do.....	11, 9 a. m.	18	.....	NNW 3	....do	Snow; ther. lowest last night, 11°.
45th Enc't.	3 p. m.	30	.....	NW 2	Cloudy	
Lat. 67° 20′ N.	7 p. m.	20	.....	NW 2	Overcast ..	
Long. 87° 52′ W.	13, 9 a. m.	28	.....	NW 5	Cloudy	Ther. lowest last night, 22°.
	3 p. m.	33	.....	NNW 7	....do	Drift.
	7 p. m.	22	.....	NNW 7	... do	Drift.
Do.....	14, 9 a. m.	18	.....	WNW 6	....do	Ther. lowest last night, 13°.
46th Enc't.	3 p. m.	26	.....	NW 4	....do	
Lat. 67° 8′ N.	7 p. m.	20	.....	NW 2	... do	
Long. 87° 41′.7 W.	15, 9 a. m.	10	.....	NNW 4	Overcast...	Snow; ther. lowest last night, 14°.
	3 p. m.	22	.....	WNW 2	Cloudy	
	7 p. m.	14	.....	NW 3	....do	
Do	16, 9 a. m.	15	.....	NW 3	Few clouds .	Ther. lowest last night, —10°.
	3 p. m.	30	.....	NNW 4	Overcast....	
	7 p. m.	18	.....	NNW 2	Cloudy	
Do.....	17, 9 a. m.	30	.....	NW 4	Overcast....	Snow; ther. lowest last night, 23°.
	3 p. m.	38	.....	NW 2	... do	
	7 p. m.	24	.....	NW 2	... do	
Do	18, 9 a. m.	34	.....	N 4	... do	Snow; ther. lowest last night, 30°.
Do.....	19, 9 a. m.	32	.....	NNE 2	Cloudy	Ther. lowest last night, 30°.
47th Enc't.	3 p. m.	38	.....	NE 4	Overcast....	Snow.
Lat. 67° 00′ N.	7 p. m.	34	.....	NE 4	....do	Snow.
Long. 87° 46′ W.						
*49th, same as 31st Enc't.	22, 9 a. m.	.....	.....	.....	.....	Ther. lowest last night, 22°.
Lat. 66° 40′ N.	*3 p. m.	32	.....	N 5	Overcast....	Snow.
Long. 87° 4′.7 W.	7 p. m.	24	.....	N 5	....do	
	23. 9 a. m.	24	.....	NNW 7	Cloudy	Drift; ther. lowest last night, 18°.
50th, same as 26th Enc't.	m. 26, 9 a. m.	35	.....	NW 5	Few clouds .	Ther. lowest last night, 22°.
Lat. 66° 31′ N.	3 p. m.	48	.....	Calm	Cloudy	
Long. 86° 56′ W.	7 p. m.	36	.....	NW 1	Overcast....	
Do	27, 9 a. m.	33	.....	NW 3	Few clouds	Ther. lowest last night, 30°.
51st Enc't.	3 p. m.	36	.....	NW 1	Cloudy	
Lat. 66° 30′ N.	7 p. m.	30	.....	NW 1	....do	
Long. 86° 34′.5 W.	28, 9 a. m.	28	.....	NW 7	Overcast....	Ther. lowest last night, 23°.
	3 p. m.	32	.....	NW 7	Cloudy	
	7 p. m.	25	.....	NW 8	Overcast....	
Do	29, 9 a. m.	27	.....	NW 7	....do	Ther. lowest last night, 20°.
	3 p. m.	25	.....	NW 7	....do	
	7 p. m.	22	.....	NW 7	....do	
Do	30, 9 a. m.	28	.....	NW 7	Cloudy	Ther. lowest last night, 22°.
	3 p. m.	30	.....	NW 6	... do	
	7 p. m.	26	.....	NW 5	Overcast....	
Do.....	31, 9 a. m.	28	.....	N 6	Cloudy	Ther. lowest last night, 23°.
	3 p. m.	30	.....	N 6	... do	
	7 p. m.	27	.....	N 5	....do	
Do	June 1, 9 a. m.	29	.....	N 6	... do	Ther. lowest last night, 20°.
	3 p. m.	30	.....	N 3	....do	
	7 p. m.	....	.....	NNE 1	....do	
Do.....	3, 9 a. m.	.....	.....	SW 3	... do	
	7 p. m.	34	.....	SW 4	Overcast....	
Do	4, 9 a. m.	31	.....	SW 4	... do	Ther. lowest last night, 28°.
	3 p. m.	36	.....	SW 3	Cloudy	
	7 p. m.	34	.....	SW 5	Overcast....	Snow.
Do.....	5, 9 a. m.	....	.....	.....	.....	Ther. lowest last night, 22°.
	3 p. m.	23	.....	NW 9	Cloudy	
	7 p. m.	20	.....	NW 8	... do	
Do.....	6, 9 a. m.	23	.....	NW 6	... do	Ther. lowest last night, 18°.
	3 p. m.	26	.....	NW 6	Overcast....	
	7 p. m.	25	.....	NW 4	Cloudy	
*52d Enc't.	7, 9 a. m.	27	.....	NW 5	... do	
Lat. 66° 27′.7 N.	*3 p. m.	....	.....	NW 2	....do	
Long. 86° 21′.7 W.	7 p. m.	....	.....	NW 3	... do	

JUNE—JULY—SEPTEMBER, 1866.

Locality.	Date.	Ther. 5.	Bar.	Wind.	Sky.	Remarks.
	1866.	°	*In.*			
52d Enc't.	June 8, 9 a. m.	30		NNW 3	Overcast...	Snow; ther. lowest last night, 25°.
Lat. 66° 27′.7 N.	3 p. m.	34		NW 4	Cloudy	Snow.
Lon. 86° 21′.7 W.	7 p. m.	28		NW 2	....do	Snow.
Do.....	9, 9 a. m.	27		NW 1	... do	Ther. lowest last night, 24°.
	3 p. m.	35		N 3	....do	
	7 p. m.	28		N 3	... do	
Do.....	10, 9 a. m.	27		NW 1	Few clouds .	Ther. lowest last night, 18°.
	3 p. m.	34		NW 1	... do	
	7 p. m.	30		SW 1	Cloudy	
Do.	11, 9 a. m.	35		NW 1	Few clouds .	Ther. lowest last night, 33°.
	3 p. m.	46		NW 1	... do	
	7 p. m.	37		NW 1	... do	
Do.....	13, 9 a. m.			S 2	....	Ther. lowest last night, 22°.
	3 p. m.	48		S 1	Cloudy	
*Starts on survey of Repulse Bay.	14, 9 a. m.	34		NW 6	....do	
	*3 p. m.	37		NW 6	....do	
Place of 51st Enc't.	15, 10 a. m.	36		NW 6	Few clouds .	Ther. lowest last night, 30°.
54th Enc't, Ft. Hope.	5½ p. m.	40		NW 6	....do	
Do..... ...	17, 7 p. m.	30		NW 3	Cloudy	
55th Enc't.	18, 5 p. m.	40		SE 4	Overcast....	
Lat. 66° 25′ N. Long. 86° 47′ W.						
57th Enc't.	July 5, 1 p. m.	54				
Lat. 66° 25′ N. Long. 85° 28′ W.						
60th Enc't.	18, m.	55		NW ..strong.	Cloudy	
Lat. 66° 29′ N.	19, m.	58				Ther. lowest last night, 40°
Long. 86° 12′ W.	20, 9 a. m.			W .very light.		
	m.	50		SW ....light.		
Do.....	22, 9 a. m.			NW light air.		
	m.	54		NW light air.		
	11½ p. m.	46		NW .light air.		
Do.....	24, 11 a. m.	51		NW... light.		
Do.....	25, 9 a. m.	48		S ....light.	Clear	
	m.			S ....light.	....do	
	3 p. m.	52		S ....light.	....do	
Do.....	26, 9 a. m.	50		W .... light.		
	m.	62		W .... light.		
	midnight.	50		Calm		
Do	27, 3 p. m.	68				
	7 p. m.	66				
Do.....	28, 9 a. m.	54		Calm	Hazy	Ther. lowest last night, 50°.
	m.			S 1		
	7 p. m.			S		
63d Enc't, near Ft. Hope.	Sept. 4, 7 a. m.	41		WNW 3	Overcast ..	Ther. lowest last night, 29°.
	7 p. m.	38		N 5	... do	Snow.
Lat. 66° 31′ N.	5, 7 a. m.	42		NNW 3	Cloudy	Ther. lowest last night, 29°.
Long. 86° 56′ W.	7 p. m.	35		NNW 1	... do	
Do.... ..	6, 7 a. m.	32		NW 2	do	Ther. lowest last night, 30°.
	m.			NW 3	do	
	9 p. m.	30		NW 1	Overcast...	
Do.....	7, 7 a. m.	28		SE.... 1	Few clouds	Ther. lowest last night, 20°.
	m.	45		SE.... 3	Cloudy	
	7 p. m.	35		SE.... 3	Overcast ..	
Do.	8, 7 a. m.	38		S 6		Rain; ther. lowest last night, 35°.
	m.	40		S 6		Rain.
	7 p. m.	41		SSW 5		Rain.
Do.	9, 7 a. m.	34				
	m.	40				
	7 p. m.	35				
Do.... ...	11, 7 a. m.	29		NNW 1	Cloudy	Ther. lowest last night, 24°.
	m.	35		SE.... 4	Overcast...	Snow.
	7 p. m.	30		E 2	.. do	Snow.
Do.....	12, 7 a. m.	32		ENE .. 2		Snow; ther. lowest last night, 30°.
	m.	35		SE .. 4	....	Snow and rain.
	7 p. m.	33		SE 4		Snow and rain.
Do.	13, 7 a. m.	31		NE 4	Overcast...	Ther. lowest last night, 30°.
	m.			NE 6		Snow and rain.
	7 p. m.			NE 7		Snow and rain.

OCTOBER—NOVEMBER—DECEMBER, 1866.

Locality.	Date.	Ther. 5.	Bar.	Wind.	Sky.	Remarks.
	1866.	°	*In.*			
69th Enc't.	Oct. 7, 7 a. m.	26		W 3	Clear	Ther. lowest last night, 14°.
near Fort Hope.	7 p. m.	28		SSW 5	Overcast	
Lat. 66° 31′ N.	8, 7 a. m.	29		S 7	....do	Ther. lowest last night, 28°.
Long. 86° 56′ W.	m.	32		S 6	....do	
	7 p. m.	32		S 6	....do	
Do.....	9, 7 a. m.	32		S 4	....do	Ther. lowest last night, 32°.
	8 p. m.	32		SSE 6	....do	Snow.
Do.....	10, 7 a. m.	32		SSE 7	.....	Snow; ther. lowest last night, 32°.
	m.	32		SE..... 6	.....	Snow.
	7 p. m.	.....	.....	.....	.....	Snow.
Do.....	16, 7 a. m.	20		NW 5	Cloudy	Ther. lowest last night, 16°.
	m.	22		NNW 6	... do	Snow and drift.
	7 p. m.	15		NNW 6	....do	Snow and drift.
Do.....	17, 7 a. m.	10		N..... 7	....do	Snow and drift; ther. lowest last
	m.	16		N 7	....do	Snow and drift. [night, 5°.
	7 p. m.	6		N 8	.. do	Snow and drift.
Do.....	18, 7 a. m.	6		NW 5	.....	Ther. lowest last night, 0°.
	m.	10		NW 4	.....	
	7 p. m.	8		NW 4	.....	
Do.....	19, 7 a. m.	4		N..... 3	Cloudy	Ther. lowest last night, 4°.
	m.	9		NW 3	....do	
	7 p. m.	6		NW 2	Overcast ..	
Do.....	20, 7 a. m.	2		N..... 2	Cloudy	Ther. lowest last night, 0°.
	m.	4		N..... 1	....do	
	7 p. m.	0		NNW 1	Overcast	
Do.....	21, 7 a. m.	— 2		N..... 6	Cloudy	Drift; ther. lowest last night, —4°.
	m.	0		N..... 6	....do	Drift.
	7 p. m.	— 3		N..... 4	....do	
Do.....	22, 7 a. m.	— 4		NW 5	Few clouds	Drift; ther. lowest last night, —6°.
	m.	4		NNW 6	....do	Drift.
	7 p. m.	0		NNW 5	... do	Drift.
Do	23, 7 a. m.	2		NNW 6	Cloudy	Drift; ther. lowest last night, 0°.
	m.	5		NNW 5	... do	Drift.
	7 p. m.	0		NNW 5	do	Drift.
Do.....	24, 7 a. m.	6		NW 6	Few clouds	Drift; ther. lowest last night, 0°.
	m.	16		NW 6	... do	Drift.
	7 p. m.	5		NW 6	Cloudy	Drift.
Do	25, 7 a. m.	0		NW 7	Few clouds	Drift; ther. lowest last night, —2°.
	m.	2		NW 7	.. do	Drift.
	7 p. m.	— 3		NW 7	....do	Drift.
Do	26, 7 a. m.	— 3		NNW 3	... do	Ther. lowest last night, — 5°.
64th Enc't.	m.	1		NW 1	Clear	
Talloon.	7 p. m.	— 4		NW 1	....do	
Lat. 66° 37′ N.	27, 7 a. m.	17		SW 2	Overcast...	Snow; ther. lowest last night, —5°.
Long. 86° 42′ W.	m.	24		SW..... 2	... do	Snow.
	7 p. m.	10		NW 1	... do ...	
Do.....	28, 7 a. m.	4		W 3	Cloudy	Ther. lowest last night, 4°.
	m.	12		NW 1	Few clouds	
	7 p. m.	8		NNW 2	Cloudy	Snow.
Do.....	Nov. 18, 7 a. m.	14		NE 4	Overcast .	Ther. lowest last night, 14°.
	m.	14		NE 6	. do	Snow and drift.
	7 p. m.	10		N 6	do	Snow and drift.
Do.....	19, 7 a. m.	— 2		NW 6	Cloudy	Drift; ther. lowest last night, —4°.
	m.	0		NW 6	... do	Drift.
	7 p. m.	— 4		NNW 6	do	Drift.
Do.....	20, 7 a. m.	— 4		NNW 6	Overcast...	Drift; ther. lowest last night, —5°.
	m.	2		NNW 5	.. do	Drift.
	7 p. m.	— 5		NNW 6	... do	Drift.
Do.....	21, 7 a. m.	— 16		WNW 2	Few clouds	Ther. lowest last night, —18°.
	m.	— 17		WNW 1	Cloudy	
	7 p. m.	— 18		NNW 2	. do	
Do	22, 7 a. m.	— 24		NW 1	Clear	Ther. lowest last night, —24°.
	m.	.....	.....	NW 1	do	
	7 p. m.	— 22		NW 1	Few clouds	
Do	23, 7 a. m.	— 16		NNW 2	Cloudy	
	m.	.....	.....	NW 2	. do	
	7 p. m.	— 20		NW 3	. do	
Do	24, 7 a. m.	— 28		Calm	Clear	Ther. lowest last night, —34°.
65th Enc't.	m.	— 24		NW 1	do	
Ships' Har-	7 p. m.	— 30		NW 1	do	
bor Islands.	Dec. 1, 7 a. m.	10		SE..... 3	Overcast ..	
Lat. 66° 6′ N.	m.	15		SE 4	.. do	
Long. 86° 6′ W.	7 p. m.	9		SE..... 3	....do	

DECEMBER, 1866—JANUARY, 1867.

Locality.	Date.	Ther.	Bar.	Wind.	Sky.	Remarks.
	1866.	°	*In.*			
65th Encl. Ships' Harbor Islands. Lat. 66° 26' N. Long. 86° 6' W.	Dec. 2, 7 a. m.	15		SE 6		Snow and drift.
	m.					
	7 p. m.					
	21, 7 a. m.	— 24		NNE 2	Cloudy	Ther. lowest last night, —24°.
	m.	— 23		NNW 2	Overcast	
	7 p. m.	— 34		NNW 3	Few clouds	
Do	22, 7 a. m.	— 34		NNW 4	do	Ther. lowest last night, —34°.
	m.	— 32		NW 3	do	
	7 p. m.	— 30		NW 2	Clear	
Do	23, 7 a. m.	— 31		WNW 2	Few clouds	Ther. lowest last night, —31°.
	m.	— 30		NW 1	do	
	7 p. m.	— 31		NW 1	Clear	
Do	24, 7 a. m.	— 27		NE 2	Few clouds	Ther. lowest last night, —32°.
	m.	— 25		NE 1	do	
	7 p. m.	— 24		NE 1	do	
Do	25, 7 a. m.					
	m.					
	7 p. m.					
Do	26, 7 a. m.	— 12		NNW 3	Cloudy	Ther. lowest last night, —15°.
	m.	— 7		NW 2	do	
	7 p. m.	— 11		NW 2	do	
Do	27, 7 a. m.	— 26		NW 2	Few clouds	Ther. lowest last night, —26°.
	m.	— 22		NW 2	Clear	
	7 p. m.	— 20		NW 2	Few clouds	
Do	28, 7 a. m.	— 12		N 2	Overcast	Ther. lowest last night, —20°.
	m.	— 11		NNW 1	do	
	7 p. m.	— 12		NNW 1	do	
Do	29, 7 a. m.	— 12		N 2	do	Ther. lowest last night, —12°.
	m.	— 14		N 2	Cloudy	
	7 p. m.	— 10		NW 3	Few clouds	
Do	30, 7 a. m.	— 11		NW 6	Overcast	Drift; ther. lowest last night, —11°.
	m.	— 12		NW 7	do	Drift.
	7 p. m.					
Do	31, 7 a. m.	— 15		NW 8	Overcast	Drift; ther. lowest last night, —16°.
	m.	— 14		NW 8	do	Drift.
	7 p. m.	— 16		NW 7	do	Drift.
	1867.					
Do	Jan. 1, 7 a. m.	— 4		E 3	Cloudy	Ther. lowest last night, —16°.
	m.	— 4		E 2	do	
	7 p. m.	— 5		E 2	Few clouds	
Do	2, 7 a. m.	— 12		NE 2	do	Ther. lowest last night, —10°.
	m.	— 13		NNE 2	Cloudy	
	7 p. m.	— 10		NNE 3	Few clouds	
Do	3, 7 a. m.	— 13		NE 3	Cloudy	Ther. lowest last night, —15°.
	m.	— 12		NNE 2	do	
	7 p. m.	— 15		NNE 2	Few clouds	
Do	4, 7 a. m.	— 22		NW 1	do	Ther. lowest last night, —24°.
	m.	— 22		NW 1	do	
	7 p. m.	— 24		NW 1	Clear	
Do	5, 7 a. m.	— 20		NW 1	Few clouds	Ther. lowest last night, —30°.
	m.	— 24		NW 1	do	
	7 p. m.	— 24		NW 1	Clear	
Do	6, 7 a. m.	— 32		Calm	do	Ther. lowest last night, —32°.
	m.	— 28		N 1	do	
	7 p. m.	— 28		NE 1	do	
Do	7, 7 a. m.	— 15		NE 2	Overcast	Fog; ther. lowest last night, —28°.
	m.	— 10		NE 1	Cloudy	
	7 p. m.	— 11		NNE 1	do	
Do	8, 7 a. m.	— 15		NNE 2	Overcast	Ther. lowest last night, —15°.
	m.	— 15		N 1	Cloudy	
	7 p. m.	— 20		NNW 1	Few clouds	
Do	9, 7 a. m.	— 26		N 1	do	Ther. lowest last night, —28°.
	m.	— 23		NNW 1	do	
	7 p. m.	— 28		NNW 1	do	
Do	10, 7 a. m.	— 28		NNW 3	Cloudy	Ther. lowest last night, —28°.
	m.	— 24		NW 2	do	
	7 p. m.	— 20		NNW 7	do	Drift.
Do	11, 7 a. m.	— 15		NNW 8		Drift; ther. lowest last night, —20°.
	m.	— 14		NNW 8		Drift.
	7 p. m.	— 12		NNW 8		Drift.
Do	12, 7 a. m.	— 26		SW 2	Clear	Ther. lowest last night, —26°.
	m.	— 23		SW 3	Few clouds	
	7 p. m.	— 25		SW 3	do	

JANUARY—FEBRUARY, 1867.

Locality.	Date.	Ther. 5.	Bar.	Wind.	Sky.	Remarks.
	1867.	°	*In.*			
65th Enc't, Ships' Harbor Islands. Lat. 66° 26′ N. Long. 86° 6′ W.	Jan. 13, 7 a. m.	— 25		SW 4	Few clouds	Ther. lowest last night, —31°.
	m.	— 24		WSW 2	do	
	7 p. m.	— 24		SSE 2	do	
	14, 7 a. m.	— 35		SW 1	Clear	Ther. lowest last night, —35°.
	m.	— 30		SW 2	do	
	7 p. m.	— 34		SW 2	Few clouds	
Do	15, 7 a. m.	— 36		NW 1	Clear	Ther. lowest last night, —36°.
	m.	— 38		NNW 2	do	
	7 p. m.	— 34		NNW 2	Few clouds	
Do	16, 7 a. m.	— 31		NW 5	do	Ther. lowest last night, —31°.
	m.	— 30		NW 5	do	
	7 p. m.	— 27		NW 4	do	
Do	17, 7 a. m.	— 31		NW 5	do	Ther. lowest last night, —31°.
	m.	— 30		NW 5	do	
	7 p. m.	— 27		NW 4	do	
Do	18, 7 a. m.	— 31		WNW 1	Clear	Ther. lowest last night, —31°.
	m.	— 28		ENE 2	do	
	7 p. m.	— 20		Calm	Hazy.	
Do	19, 7 a. m.	— 15		NNE 1	Cloudy	Ther. lowest last night, —15°.
	m.	— 4		SE 2	do	
	7 p. m.	— 3		N 2	do	
Do	20, 7 a. m.	— 3		NNE 3	Overcast	Ther. lowest last night, —3°.
	m.	— 3		N 2	Cloudy	
	7 p. m.	— 12		NW 1	do	
Do	21, 7 a. m.	6		NNE 2	Overcast	Ther. lowest last night, —12°.
	m.	8		NE 2	Cloudy	
	7 p. m.	4		NE 1	do	
Do	22, 7 a. m.	5		NE 3	Overcast	Ther. lowest last night, 3°.
	m.	8		ENE 2	do	
	7 p. m.	4		NE 2	Hazy.	
Do	13, 7 a. m.	— 14		NW 2	Few clouds	Ther. lowest last night, —15°.
	m.	— 12		NW 1	do	
	7 p. m.	— 12		NNW 1	do	
Do	24, 7 a. m.	— 12		NW 1	Cloudy	Ther. lowest last night, —12°.
	m.			Calm	do	
	7 p. m.	0		Calm	Overcast	
Do	25, 7 a. m.	0		NW 1	do	Ther. lowest last night, —3°.
	m.	2		NW 2	do	
	7 p. m.					
Do	26, 7 a. m.	— 20		NW 6	Cloudy	Drift; ther. lowest last night, —20°.
	m.	— 25		NW 6	do	Drift.
	7 p. m.	— 30		NW 4	do	
Do	27, 7 a. m.	— 33		NW 5	Few clouds	Ther. lowest last night, —34°.
	m.	— 30		NNW 6	do	
	7 p. m.	— 26		NNW 3	Hazy.	
Do	28, 7 a. m.	— 34		NW 6	Cloudy	Ther. lowest last night, —34°.
	m.	— 32		NNW 5	do	
	7 p. m.	— 37		NNW 5	do	
Do	29, 7 a. m.	— 39		NW 2	Few clouds	Ther. lowest last night, —39°.
	m.	— 33		Calm	Cloudy	Fog.
	7 p. m.	— 37		NNE 1	Fog; hazy.	
Do	30, 7 a. m.	— 34		NNE 4	Few clouds	Fog; ther. lowest last night, —34°.
	m.	— 30		NE 4	do	Fog.
	7 p. m.	— 34		NE 4	do	
Do	31, 7 a. m.	— 20		WSW 4	Cloudy	Fog; ther. lowest last night, —34°.
	m.	— 20		W 3	do	Fog.
	7 p. m.	— 26		W 3	Few clouds	
Do	Feb. 1, 7 a. m.	— 30		N 3	Cloudy	Ther. lowest last night, —32°.
	m.	— 24		NNE 2	do	
	7 p. m.	— 28		NNE 2	Few clouds	
Do	2, 7 a. m.	— 28		NE 2	do	Ther. lowest last night, —28°.
	m.	— 23		NE 1	Clear	
	7 p. m.	— 28		NE 2	do	
Do	3, 7 a. m.	— 12		S 4	Overcast	Snow; ther. lowest last night, —28°.
	m.	— 8		SSE 6	do	Snow.
	7 p. m.	— 5		SSE 6	do	Snow.
Do	4, 7 a. m.	— 22		NNW 7	Cloudy	Drift; ther. lowest last night, —22°.
	m.	— 27		NNW 6	do	Drift.
	7 p. m.	— 33		NNW 2	Few clouds	Aurora.
Do	5, 7 a. m.	— 39		NNW 1	Clear	Ther. lowest last night, —39°.
	m.	— 29		SW 1	do	
	7 p. m.	— 39		Calm	do	

FEBRUARY, 1867.

Locality.	Date.	Ther. 5.	Bar.	Wind.	Sky.	Remarks.
	1867.	°	*In.*			
65th Enc't, Ships' Harbor Islands. Lat. 66° 26′ N. Long. 86° 6′ W.	Feb. 6, 7 a. m.	— 40	.....	NNW 2	Clear	Ther. lowest last night, —40°.
	m.	— 34	.....	NNW 1	....do	
	7 p. m.	— 38	.....	NNW 1	....do	

Register kept during Hall's journey to Igloolik by Frank Leonard (or Lailor?), a seaman.

Locality.	Date.	Ther. 5.	Bar.	Wind.	Weather.	Remarks.
	1867.	°	*In.*			
65th Enc't, Ships' Harbor Islands. Lat. 66° 26′ N. Long. 86° 6′ W.	Feb. 9, a. m.	.....	.....	SE .. Light..	Fine	
	m.	— 27	.....	NW ..Light..	....do	
	p. m.	— 38	.....	NW ..Light..	do	
	10, a. m.	— 30	.....	NW ..Light..	Cloudy	Ther. lowest last night, —40°.
	m.	— 30	.....	NW ..Light..	Fine	
	p. m.	— 37	.....	NNW Light..	.. do	
Do.....	11, a. m.	— 42	.....	NW ..Light..	.. do	Ther. lowest last night, —44°.
	m.	— 36	.....	NW ..Light..	.. do	
	p. m.	— 42	.....	NW ..Light..	...do	
Do.....	12, a. m.	— 37	.....	NE ..Light..	Cloudy	Ther. lowest last night, —42°.
	m.	— 30	.....	NE ...Light..	...do	
	p. m.	— 32	.....	ENE..Light..	.. do	
Do.....	13, a. m.	— 32	.....	NW ..Light	Fine	
	m.	— 32	.....	NE ...Light..	...do	
	p. m.	— 36	.....	NE ...Light..	...do	
Do.....	14, a. m.	— 30	.....	E ....Light..	Cloudy	Ther. lowest last night, —38°.
	m	— 24	.....	E ...Light..	....do	
	p. m.	— 14	.....	SE....Strong	Stormy	
Do.....	15, a. m.	— 9	.....	SE....Strong	...do	Ther. lowest last night, —16°.
	m.	— 7	.....	NE ...Strong	.. do	
	p. m.	— 14	.....	N .... Strong.	.. do	
Do.....	16, a. m.	— 18	.....	NW ..Gale ..	...do	Ther. lowest last night, —20°.
	m.	— 26	.....	NW ..Gale ..	.. do	
	p. m.	— 30	.....	NW ..Gale ..	...do	
Do.....	17, a. m.	— 34	.....	NW ..Fresh	Fine	Ther. lowest last night, —36°.
	m.	— 32	.....	NW ..Fresh	...do	
	p. m.	— 36	.....	NW...Fresh	do	
Do.....	18, a. m.	— 35	.....	NW ..Strong	Stormy	Ther. lowest last night, —37°.
	m.	— 34	.....	NW...Strong	.. do	
	p. m.	— 33	.....	NW...Strong.	.. do	
Do.....	19, a. m.	— 24	.....	NNW Gale ..	...do	Ther. lowest last night, —34°.
	m.	— 22	.....	NNW Gale ..	...do	
	p. m.	— 22	.....	NNW Gale ..	.. do	
Do.....	20, a. m.	— 20	.....	NW ..Strong	...do	Ther. lowest last night, —22°.
	m.	— 20	.....	NW ..Fresh..	...do	
	p. m.	— 23	.....	NW ..Fresh..	...do	
Do.....	21, a. m.	— 20	.....	NE ..Fresh..	Fine	Ther. lowest last night, —26°.
	m.	— 18	.....	NE ..Fresh..	....do	
	p. m.	— 26	.....	NE ..Fresh..	.. do	
Do.....	22, a. m.	— 26	.....	NE ..Light..	Hazy	Ther. lowest last night, —30°.
	m.	— 20	.....	SE ....Light..	....do	
	p. m.	— 24	.....	SE ....Light..	Thick	
Do.....	23, a. m.	— 22	.....	SE ....Light..	.. do	Ther. lowest last night, —28°.
	m.	— 12	.....	SE ....Fresh..	....do	
	p. m.	— 13	.....	SE ....Fresh..	....do	
Do.....	24, a. m.	— 14	.....	SE ....Strong	Stormy	Ther. lowest last night, —14°.
	m.	— 2	.....	E ....Fresh..	Thick	
	p. m.	— 8	.....	E.by N Fresh..	....do	
Do.....	25, a. m.	— 20	.....	NW ..Light..	Fine	Ther. lowest last night, —22°.
	m.	— 14	.....	NW ..Light..	....do	
	p. m.	— 20	.....	NW ..Light..	....do	
Do.....	26, a. m.	— 29	.....	NW ..Light..	....do	Ther. lowest last night, —30°.
	m.	— 20	.....	NW ..Light..	.. do	
	p. m.	— 28	.....	NW ..Light..	.. do	
Do.....	27, a. m.	— 30	.....	NW ..Light..	....do	Ther. lowest last night, —36°.
	m.	— 26	.....	NW ..Light..	....do	
	p. m.	— 36	.....	NW ..Light..	....do	
Do.....	28, a. m.	— 32	.....	NW ..Fresh..	....do	Ther. lowest last night, —38°.
	m.	— 30	.....	NW ..Light..	....do	
	p. m.	— 38	.....	NW ..Light..	....do	

MARCH, 1867.

Locality.	Date.	Ther. 5.	Bar.	Wind.	Weather.	Remarks.
	1867.	°	*In.*			
65th Enc't.	Mar. 1, a. m.	— 32	.....	W .. Light..	Fine	Ther. lowest last night, —42°.
Ships' Harbor	m.	— 24	.....	NE ...Light..	... do	
Islands.	p. m.	— 32	.....	NE ...Light..	....do	
Lat. 66° 26′ N.	2, a. m.	— 22	.....	SE ...Light..	Cloudy	Ther. lowest last night, —32°.
Long. 86° 6′ W.	m.	— 18	.....	NE ...Light..	.. do	
	p. m.	— 18	.....	NE ...Light..	Thick	
Do.....	3, a. m.	— 22	.....	NE ..Fresh..	....do	Drift; ther. lowest last night, —24°.
	m.	— 22	.....	N ... Light..	Cloudy	
	p. m.	— 32	.....	NNW. Strong	Thick	
Do.....	4, a. m.	— 28	.....	NW ..Fresh..	...do	Ther. lowest last night, —33°.
	m.	— 26	.....	NW ..Fresh..	.. do	
	p. m.	— 26	.....	NW ..Fresh..	....do	Drift.
Do.....	5, a. m.	— 22	.....	NNE Light..	Cloudy	Ther. lowest last night, —27°.
	m.	— 18	.....	ENE..Light..	Fine	
	p. m.	— 32	.....	NE ...Light..	... do	
Do.....	6, a. m.	— 32	.....	NW ..Light..	....do	Ther. lowest last night, —38°.
	m.	— 22	.....	NW ..Light..	.. do	
	p. m.	— 24	.....	NW ..Light..	... do	
Do.....	7, a. m.	— 26	.....	NE ..Light..	.. do	Ther. lowest last night, —30°.
	m.	— 16	.....	NE ...Light..	....do	
	p. m.	— 32	.....	NE ...Light..	....do	
Do.....	8, a. m.	— 22	.....	NE ...Strong	Stormy	Ther. lowest last night, —36°.
	m.	— 16	.....	NE ...Strong.	....do	
	p. m.	— 16	.....	NE ...Strong	....do	
Do.....	9, a. m.	— 10	.....	NE ...Light..	Thick	Ther. lowest last night, —18°.
	m.	— 5	.....	NE ...Light..	Fine	
	p. m.	— 23	.....	NW ..Light..	....do	
Do.....	10, a. m.	— 22	.....	NW ..Light..	.. do	Ther. lowest last night, —34°.
	m.	— 12	.....	NW ..Light..	....do	
	p. m.	— 29	.....	NW ..Light..	....do	
Do.....	11, a. m.	— 18	.....	NE ...Fresh..	Thick	Ther. lowest last night, —36°.
	m.	— 14	.....	NE ...Fresh..	Cloudy	
	p. m.	— 22	.....	NW ..Fresh..	Thick	
Do.....	12. a. m.	— 12	.....	NE ...Gale ...	Stormy	Ther. lowest last night, —23°.
	m.	— 8	.....	NE ...Gale	....do	
	p. m.	5	.....	NE ...Gale	....do	
Do.....	13, a. m.	2	.....	E ...Fresh..	Fine	Ther. lowest last night, —2°.
	m.	0	.....	E ....Strong.	Thick	Drift.
	p. m.	— 6	.....	E .....Strong.	Stormy	
Ds.....	14, a. m.	0	.....	NE ...Fresh..	Cloudy	Ther. lowest last night, —12°.
	m.	5	.....	NE ...Fresh..	....do	
	p. m.	3	.....	N .....Strong.	Stormy	
Do.....	15, a. m.	16	.....	NE ...Strong.	....do	Ther. lowest last night, 3°.
	m.	28	.....	NE ...Strong.	....do	
	p. m.	20	.....	NE ...Strong.	....do	
Do.....	16, a. m.	4	.....	S ....Light..	Fine	Ther. lowest last night, 3°.
	m.	5	.....	SW ..Light..	....do	
	p. m.	— 3	.....	NW ..Light..	Cloudy	
Do.....	17, a. m.	2	.....	SW...Light..	....do	Snow; ther. lowest last night, —5°.
	m.	2	.....	SW ...Fresh..	....do	Drift.
	p. m.	— 14	.....	NW ..Light..	Fine	
Do.....	18, a. m.	— 10	.....	NW ..Light..	....do	Ther. lowest last night, —26°.
	m.	— 6	.....	NW ..Light..	....do	
	p. m.	— 16	.....	NW ..Light..	....do	
Do.....	19, a. m.	— 2	.....	N .... Light..	....do	Ther. lowest last night, —19°.
	m.	2	.....	N .....Light..	....do	
	p. m.	— 10	.....	N .....Fresh .	....do	
Do.....	20, a. m.	— 8	.....	NW ..Light..	....do	Ther. lowest last night, —20°.
	m.	0	.....	NW ..Light..	....do	
	p. m.	— 14	.....	NW ..Light..	....do	
Do.....	21, a. m.	— 12	.....	NE ...Light..	....do	Ther. lowest last night, —24°.
	m.	0	.....	SW ...Light..	....do	
	p. m.	— 2	.....	W ... Light..	Cloudy	
Do.....	22, a. m.	3	.....	NE ...Fresh .	Thick	Drift; ther. lowest last night, —12°.
	m.	8	.....	NE ...Fresh .	.. do	Drift.
	p. m.	8	.....	E .....Fresh .	....do	
Do.....	23, a. m.	12	.....	E .... Strong.	Stormy	Ther. lowest last night, 8°.
	m.	2	.....	SE ...Strong.	...do	
	p. m.	— 6	.....	SW ...Fresh .	Fine	
Do.....	24, a. m.	— 2	.....	S .....Light..	....do	Ther. lowest last night, —8°.
	m.	8	.....	Calm	....do	
	p. m.	— 18	.....	NW ..Light..	....do	

FEBRUARY—MARCH—APRIL, 1867.

Locality.	Date.	Ther. 5.	Bar.	Wind.	Weather.	Remarks.
	1867.	°	*In.*			
65th Enc't.	Mar. 25, a. m.	— 4	.....	SW ...Light..	Fine	Ther. lowest last night, —22°.
Ships' Harbor	m.	— 3	.....	Calm	....do	
Islands.	p. m.	— 22	.....	SE ....Light..	....do	
Lat. 66° 26′ N.	26, a. m.	— 12	.....	SE ....Light..	....do	Ther. lowest last night, —28°.
Long. 86° 6′ W.	m.	— 8	.....	SE ....Light..	.. do	
	p. m.	— 8	.....	S.....Light..	Thick	
Do.....	27, a. m.	— 6	.....	NE ...Light..	Fine	Ther. lowest last night, —9°.
	m.	— 6	.....	NE ...Light..	....do	
Do.....	28, a. m.	— 4	.....	SE ....Fresh .	Thick	
	m.	3	.....	SE ....Fresh .	.. do	
	p. m.	2	.....	E ....Strong	Stormy	
Do.....	29, a. m.	2	.....	NE ...Fresh	Thick	Drift; ther. lowest last night, —6°.
	m.	6	.....	E .... Light..	Fine	
	p. m.	2	.....	E .....Strong.	Stormy	
Do.....	30, a. m.	14	.....	SE ....Fresh .	do	Ther. lowest last night, 2°.
	m.	18	.....	SE ....Fresh .	Thick	
	p. m.	14	.....	SE ....Strong.	do	
Do.....	31, a. m.	14	.....	E .....Strong	Stormy	Ther. lowest last night, 16°.
	m.	14	.....	SE . Fresh .	Thick	Drift.
	p. m.	10	.....	E ....Light..	.. do	
Do.....	Apr. 1, a. m.	14	.....	NE ...Light..	....do	Snow; ther. lowest last night, 4°.
	m.	20	.....	NE ...Light..	... do	Snow.
	p. m.	8	.....	N .....Light..	.. do	Snow.
Do.....	2, a. m.	8	.....	NW ..Strong.	Stormy	Ther. lowest last night, 5°.
	m.	5	.....	NW ..Gale ..	....do	
Do.....	4, a. m.	4	.....	NE ...Light..	Cloudy	Ther. lowest last night, —2°.
	m.	0	.....	NW ..Gale...	Stormy	
	p. m.	— 9	.....	NW ..Gale...	... do	
Do.....	5, a. m.	— 8	.....	NW ..Fresh .	Fine	Ther. lowest last night, —18°.
	m.	— 7	.....	NW ..Fresh .	....do	
	p. m.	— 14	.....	NW ..Light..	....do	
Do.....	6, a. m.	— 14	.....	NW ..Light..	.. do	Ther. lowest last night, —24°.
	m.	— 6	.....	NW ..Light..	... do	
	p. m.	— 14	.....	NW ..Light..	.. do	

Hall's observations on sledge journey to Ig-loo-lik.

Locality.	Date.	Ther. 5.	Bar.	Wind.	Sky.	Remarks.
	1867.	°	*In.*			
1st Igloo.	Feb. 7, 7 a. m.	— 41	.....	NNW 1	Clear	Ther. lowest last night, —41°.
Lat. 66° 35′ N.	m.	— 37	.....	NNW 1	Few clouds	
Long. 86° (?) W.	7 p. m.	— 45	.....	Calm	Clear	
Do	8, 7 a. m.	— 38	.....	NNW 1	Cloudy	Ther. lowest last night, —45°.
	m.	— 34	.....	SE 3	Few clouds	
	7 p. m.	— 36	.....	Calm	do	
Do.....	9, 7 a. m.	— 34	.....	NW 2	Clear	Ther. lowest last night, —34°.
	m.	— 36	.....	NE 2	....do	
	7 p. m.	— 42	.....	NNW 1	do	
2d Igloo.	10, 7 a. m.	— 42	.....	Calm	Few clouds	Ther. lowest last night, —44°.
	m.	— 36	.....	NE 2	Clear	
	7 p. m.	— 37	.....	NE 2	.. do	
3d Igloo.	11, 7 a. m.	— 44	.....	SW 1	.. do	Ther. lowest last night, —44°.
Ross Bay.	m.	— 38	.....	NW 2	.. do	
	7 p. m.	— 48	.....	E 1	... do	
4th Igloo.	12, 7 a. m.	— 47	.....	E. 1	Cloudy	Fog; ther. lowest last night, —50°.
Near Neebar-	m.	— 30	.....	E 1	....do	Fog.
bic Cr.	7 p. m.	— 28	.....	E 2	....do	Fog.
5th Igloo.	13, 7 a. m.	— 34	.....	NW 2	Clear	Ther. lowest last night, —34°.
	m.	— 35	.....	NW 1	....do	
	7 p. m.	— 40	.....	NW 1	....do	
6th Igloo.	14, 7 a. m.	— 40	.....	NE 1	Cloudy	Fog; ther. lowest last night, —47°.
	m.	— 30	.....	NE 2	....do	Fog.
	7 p. m.	— 27	.....	SE 3	.. do	Fog.
Do.... ...	15, 7 a. m.	— 16	.....	NE 7	Overcast....	Snow and drift; ther. lowest last night, —27°.
	m.	— 15	.....	NE 8	Cloudy	Snow and drift.
	7 p. m.	— 18	.....	NNE 7	....do	Snow and drift.

FEBRUARY—MARCH, 1867.

Locality.	Date.	Ther. 5.	Bar.	Wind.	Sky.	Remarks.
	1867.	°	*In.*			
6th Igloo.	Feb. 16, 7 a. m.	— 23	.....	N 9	.....	Drift; ther. lowest last night,—23°.
	m.	— 20	.....	N 10	.....	Drift.
	7 p. m.	— 24	.....	W 5	Clear	
7th Igloo.	17, 7 a. m.	— 32	.....	N 1	....do	Ther. lowest last night, —32°.
Near Pinguarku Mt.	m.	— 32	.....	NNW 4	... do	
	7 p. m.	— 42	.....	NNW 2	Few clouds	
Do.....	18, 7 a. m.	— 34	.....	NW 7	Cloudy	Drift; ther. lowest last night,—46°.
	m.	— 28	.....	NW 6	.. do	Drift.
	7 p. m.	— 23	.....	NW 6	.. do	Drift.
Do.....	19, 7 a. m.	— 21	.....	NE 8	... do	Drift; ther. lowest last night,—23°.
	m.	— 12	.....	NE 7	....do	Drift.
	7 p. m.	— 23	.....	NE 5	... do	Drift.
8th Igloo.	20, 7 a. m.	— 14	.....	NE 5	.. do	Fog; ther. lowest last night. —23°.
	m.	— 10	.....	N 4	....do	Snow.
	7 p. m.	— 18	.....	NNW 5	Overcast...	Snow.
9th Igloo.	21, 7 a. m.	— 37	.....	NNW 2	Few clouds	Ther. lowest last night, —37°.
Oesoearku.	m.	— 15	.....	NW 1	Clear	
	7 p. m.	— 32	.....	NW 3	... do	
10th Igloo.	22, 7 a. m.	— 34	.....	NW 1	Few clouds	Ther. lowest last night, —34°.
	m.	— 18	.....	NW 3	.. do	
	7 p. m.	— 36	.....	NW 2	Clear	
11th Igloo.	23, 7 a. m.	— 30	.....	NW 1	Few clouds	Ther. lowest last night, —30°.
N'r Ingnuktoo.	m.	— 28	.....	NW 4	Cloudy	
	7 p. m.	— 26	.....	S 4	.. do	
12th Igloo.	24, 7 a. m.	— 6	.....	E 5	Overcast...	Ther. lowest last night, —26°.
N'r Ooglit Isle.	m.	— 3	.....	E 7	Cloudy	Drift.
	7 p. m.	— 5	.....	E 8	....do	Drift.
13th Igloo.	25, 7 a. m.	3	.....	Calm	.. do	Snow.
	m.	10	.....	NW 1	...do	
	7 p. m.	— 2	.....	NW 1	.. do	
14th Igloo.	26, m.	— 8	.....	.....	.. do	Ther. lowest last night, —16°.
N'r Pingitkalik	*27, 7 a. m.	— 36	.....	NW 4	Few clouds	Ther. lowest last night, —40°.
*15th Igloo.	m.	— 34	.....	NW 5	Cloudy	
Ig-loo-lik.	7 p. m.	— 38	.....	NW 3	Few clouds	
Do.....	28, 7 a. m.	— 34	.....	NNW 6	Cloudy ...	Drift; ther. lowest last night,—38°.
	m.	— 30	.....	NW 7	.. do	Drift.
	7 p. m.	— 33	.....	NW 3	Few clouds	
Do.....	Mar. 1, 7 a. m.	— 40	.....	NW 1	.. do	Ther. lowest last night, —40°.
	m.	— 30	.....	NW 1	.. do	
	7 p. m.	— 43	.....	NNW 2	.. do	
Do	2, 7 a. m.	— 20	.....	S 3	Cloudy	
	m.	— 17	.....	S 4	.. do	
	7 p. m.	— 23	.....	S 3	.. do	
Do.....	3, 7 a. m.	— 29	.....	N 3	.. do	Ther. lowest last night, —32°.
	m.	— 24	.....	NNW 5	...do	
	7 p. m.	— 36	.....	NW 5	Few clouds	
Do	4, 7 a. m.	— 36	.....	NW 7	Cloudy	Drift; ther. lowest last night, —36°.
	m.	— 33	.....	NW 5	....do	Drift.
	7 p. m.	— 37	.....	NW 3	Few clouds	
Do..... .	5, 7 a. m.	— 41	.....	NNW 3	... do	Ther. lowest last night, —41°.
	m.	— 33	.....	NNW 1	Clear	
	7 p. m.	— 45	.....	NNW 2	Few clouds	
16th Igloo.	6, 7 a. m.	— 45	.....	N 2	....do	Ther. lowest last night, —48°.
Near Igleolik.	m.	— 39	.....	NNW 3	.. do	
	7 p. m.	— 42	.....	NW 2	.. do	
Do.....	7, 7 a. m.	— 38	.....	Calm	.. do	Ther. lowest last night, —46°.
	m.	— 31	.....	NW 2	... do	
	7 p. m.	— 36	.....	NW 1	...do	
Do	8, 7 a. m.	— 36	.....	NW 1	Clear	Ther. lowest last night, —42°.
	m.	— 28	.....	E 3	.....	Hazy.
	7 p. m.	— 20	.....	E 5	.....	Hazy.
Do..... .	9, 7 a. m.	— 15	.....	E 6	Cloudy	Drift; ther. lowest last night, —21°.
	m.	— 4	.....	E 4	...do	
	7 p. m.	— 13	.....	E 2	.. do	
17th Igloo.	10, 7 a. m.	— 20	.....	N 1	Few clouds	Ther. lowest last night, —22°.
Tern Isl.	m.	...	...	NNW ... 2	Cloudy	
	7 p. m.	.....	.....	NNW 1	Few clouds	
18th, same as 16th Igloo.	11, 7 a. m.	.....	.....	Calm ...	.. do	
	7 p. m.	— 30	... ..	NW 2	Cloudy	
Do ...	12, 7 a. m.	— 15	.....	E 7	Overcast...	Drift; ther. lowest last night,—31°.
	m.	0	.....	E 8	.....	Snow and drift.
	7 p. m.	5	.....	ESE 8	... ..	Snow and drift.

MARCH—APRIL—MAY, 1867.

Locality.	Date.	Ther. 5.	Bar.	Wind.	Sky.	Remarks.
	1867.		*In.*			
18th Igloo same as 16th.	Mar. 13, 7 a. m.	10		SE 9	.....	Snow and drift; ther. lowest last night, 5°.
	m.	8		SE 8	.....	Snow and drift.
	7 p. m.	— 2		Calm	Cloudy	
Do	14, 7 p. m.	10		NE 5	Overcast....	
Do	15, 7 a. m.	10		E 7	....do	Snow and drift.
	m.	11		E 6	... do	Snow and drift.
	7 p. m.	18		SE 5	... do	
1st Igloo of return, near Igloolik.	16, 7 a. m.	16		SE 5	Cloudy	Ther. lowest last night, 16°
	m.	20		SE 5	Overcast....	
	7 p. m.	7		Calm	Few clouds	
Do	17, 7 a. m.	4		NW 1	...do	Ther. lowest last night, —7°.
	m.	19		Calm	Cloudy	
	7 p. m.	8		SW 1	Overcast ..	
2d Igloo of return.	18, 7 a. m.	— 10		NW 5	Few clouds .	Ther. lowest last night, —10°.
	m.	— 6		NW 6	Clear	Drift.
	7 p. m.	— 16		NW 1	.. do	
3d Igloo of return, on New Lake.	19, 7 a. m.	— 16		NW 2	.. do	Ther. lowest last night, —16°.
	m.	— 10		NW 6	.. do	Drift.
	7 p. m.	— 12		NW 4	...do	
4th Igloo of return.	20, 7 a. m.	— 15		NW 3	.. do	
	m.	— 1		NW 5	Few clouds .	
	7 p. m.	— 10		NW 5	Clear	
5th Igloo of return, west of Amitoke.	21, 7 a. m.	— 12		NW 1	Few clouds .	Ther. lowest night, —20°.
	m.	4		SW 3	.. do	
	7 p. m.	0		SW 2	....do	
6th Igloo of return, same as 9th of outward journey, Oosooarku.	22, 7 a. m.	— 20		NW 1	...do	Ther. lowest night, —24°.
	m.	4		S 2	Cloudy	Snow.
	7 p. m.	— 4		N 5	.. do	Snow.
	23, 7 a. m.	5		NE 5	Overcast ...	Snow; ther. lowest last night, —4°.
	m.	10		NE 5	....do	Snow.
	7 p. m.	— 1		SW 6	Cloudy	
7th Igloo of return.	24, 7 a. m.	— 7		SE 3	Overcast....	Snow; ther. lowest last night, —11°.
	m.	6		SE 2	.. do	Snow.
	7 p. m.	— 10		SW 2	Cloudy	
8th Igloo of return.	25, 7 a. m.	— 18		SW 2	Few clouds	Fog; ther. lowest last night, —20°.
	m.	— 14		W 6	....do	Drift.
	7 p. m.	— 17		W 1	.. do	
9th Igloo of return, n'r Pinguarku Mt.	26, 7 a. m.	— 28		SW 2	...do	Ther. lowest last night, —30°.
	m.	— 4		WSW 1	.. do	
	7 p. m.	— 19		SSW 2	Overcast ..	
10th Igloo of return.	27, 7 a. m.	— 23		Calm	Clear	Ther. lowest last night, —28°.
	m.	— 5		W 1	.. do	
	7 p. m.	— 26		SW 1	Few clouds .	
11th Igloo of return, near Lyon's Inlet.	28, 7 a. m.	— 12		NE 5	Overcast	Snow; ther. lowest last night, —26°.
	m.	— 5		NE 7	.....	Snow and drift.
	7 p. m.	2		NE 9	.....	Snow and drift.
Ships' Harbor Islands.	Apr. 24, 9.30 a. m.	— 3		NNE 4	.....	Hazy; ther. lowest last night, —12°.
	m.	0		NNE 3	Cloudy	
Lat. 66° 26′ N.	9.30 p. m.	— 10		NNE 7	....do	
Long. 86° 6′ W.	25, 9.30 a. m.	16		E 3	.....	Ther. lowest last night, —12°.
	m.	0		NE 3	.....	
Do	26, 9.30 a. m.	0		NE 2	.....	Hazy; ther. lowest last night, —10°.
			On journey to Cape Weynton.			
1st Igloo, Fort Hope.	May 1, 7 a. m.	4		SSE 6	Cloudy	Drift; ther. lowest last night, —5°.
	m.	10		SSE 6	....do	Drift.
	7 p. m.	1		SSE 5	....do	Drift.
2d Igloo.	2, 10 a. m.	16		SSE 5	Overcast. ..	Ther. lowest last night, —10°.
Christie Lake.	m.	16		SSE 5	Cloudy	
Do	3, 7 a. m.	13		NW 7	Overcast....	Drift.
	m.	16		WNW 7	....do	Drift.
	7 p. m.	17		WNW 2	.....	Snow.
3d Igloo.	4, 7 a. m.	12		WNW 6	Cloudy	Drift; ther. lowest last night, 12°.
Miles Lake	m.	14		WNW 6	Few clouds .	Drift.
	7 p. m.	15		NW 2	....do	
Do	5, 7 a. m.	15		NW 1	Clear	Ther. lowest last, —10°.
	m.	— 24?		.....	Few clouds	
6th Igloo.	8, 7 a. m.	18		SE 5	Overcast....	Drift; ther. lowest last night, 18°.
Near Cape	m.	18		SE 5	Cloudy	Drift.
Weynton.	7 p. m.	20		SE 5	Overcast....	Drift.
Do.....	9, 7 a. m.	22		SSE 7	.. do	Snow and drift; ther. lowest last night, 22°.
	m.	23		SSE 6	Cloudy	Snow and drift.
	7 p. m.	22		SSE 6	Overcast...	Snow and drift.

MAY, 1867—APRIL, 1868.

Locality.	Date.	Ther. 5.	Bar.	Wind.	Sky.	Remarks.
	1867.	°	*In.*			
6th Igloo.	May 10, 7 a. m.	28	.....	SSE 5	Overcast....	Ther. lowest last night, 28°.
Near Cape	m.	30	.....	SSE 4	....do	
Weynton.	7 p. m.	28	.....	SSE 5	....do	
1st Igloo of return.	11, 7 p. m.	23	.....	SW 1	Few clouds .	
Enc't No. 120.	July 15, 7 a. m.	42	.....	SE 3	Cloudy	Ther. lowest last night, 38°.
Ships' Harbor	m.	50	.....	E 2	....do	
Islands.	7 p. m.	45	.....	E 2	....do	Fog.
Lat. 66° 26′ N.	16, 7 a. m.	40	.....	E 4	Overcast ...	Ther. lowest last night, 38°.
Long. 86° 6′ W.	m.	55	.....	E 1	Cloudy	
	7 p. m.	43	.....	SE 3	....do	
Do	17, 7 a. m.	42	.....	SE 4	... do	Ther. lowest last night, 41°.
	m.	50	.....	SE 1	....do	
	7 p. m.	42	.....	E 2	Overcast....	
Do..... ...	18, 7 a. m.	41	.....	E 2	....do	Rain; ther. lowest last night, 40°.
	m.	42	.....	ESE 3	....do	Rain.
	7 p. m.	40	.....	SE 2	....do	Rain.
Do..... ..	19, 7 a. m.	42	.....	W 1	....do	Ther. lowest last night, 41°.
	m.	48	.....	N. by W 1	....do	
	7 p. m.	42	.....	N. by W ... 3	....do	
Do.....	20, 7 a. m.	48	.....	NE 2	Cloudy	Ther. lowest last night, 41°.
	m.	55	.....	WSW 1	....do	
	7 p. m.	50	.....	WSW 1	....do	
Do.....	21, 7 a. m.	41	.....	W 1	....do	Ther. lowest last night, 40°.
	m.	52	.....	SSW 1	....do	
	7 p. m.	46	.....	W 1	....do	
Do.....	22, 7 a. m.	51	.....	NW 2	Few clouds .	Ther. lowest last night, 43°.
	m.	52	.....	NW 1	....do	
	7 p. m.	46	.....	NW 1	Clear	
Do.....	23, 7 a. m.	46	.....	NNW 1	Cloudy	
	m.	48	.....	NW 4	Clear	
	7 p. m.	42	.....	NW 2	....do	
Do	24, 7 a. m.	47	.....	NW 6	Cloudy . . .	
	m.	49	.....	NW 5	Few clouds .	
	7 p. m.	42	.....	NNW 6	Cloudy	
Do.....	25, 7 a. m.	45	.....	NW 5	....do	Ther. lowest last night, 42°.
	m.	50	.... ..	NNW 5	Few clouds .	
	7 p. m.	47	.....	NNW 6	....do	
Do	26, 7 a. m.	47	.....	NNW 6	Cloudy	Ther. lowest last night, 44°.
	m.	56	.....	NNW 6	....do	
	7 p. m.	46	.....	NNW 6	....do	
Do.....	27, 7 a. m.	46	.....	Calm	....do	Ther. lowest last night, 42°.
	m.	53	.....	Calm	Clear	
	7 p. m.	43	.....	NW 2	Cloudy	
Do	28, 7 a. m.	42	.....	NW 4	Overcast....	Ther. lowest last night, 40°.
	m.	51	.....	NW 3	....do	
	7 p. m.	45	.....	Calm	.....	Rain.
Do	29, 7 a. m.	43	.....	NW 3	Cloudy	Ther. lowest last night, 37°.
	m.	54	.....	NW 4	....do	
	7 p. m.	48	.....	NW 3	....do	
Do.....	30, 7 a. m.	43	.....	NW 1	....do	Ther. lowest last night, 35°.
	m.	50	.....	SW 1	.. do	
	7 p. m.	50	.....	Calm	....do	Rain.
Do.....	31, 7 a. m.	41	.....	NNW 5	....do	Ther. lowest last night, 32°.
	m.	48	.....	NNW 6	....do	
	7 p. m.	44	.....	NW 6	....do	
Do.....	Aug. 1, 7 a. m.	44	.....	NW 1	....do	Ther. lowest last night, 34°.
	On sledge-journey to Fury and Hecla Strait.					
	1868.					
7th Igloo.	Mar. 30, 7 a. m.	— 14	.....	NW 1	Few clouds .	
Lake Nappoo.	m.	— 8	.....	NW 7	....do	Drift.
	7 p. m.	— 10	.....	NW 7	....do	Drift.
8th Igloo.	31, 7 a. m.	— 11	.....	NW 1	....do	
	m.	+ 4	.....	NW 2	....do	
	7 p. m.	— 8	.....	NW 1	....do	
9th Igloo.	Apr. 1, 7 a. m.	— 8	.....	NW 5	Cloudy	
11th Igloo,	4, 7 a. m.	— 10	.....	NW 1	Clear	
N. end of Amitoke.	m.	— 10	.. ....	NW 3	....do	
	7 p. m.	— 15	.....	NW 2	....do	
12th Igloo.	5, 7 a. m.	— 7	.....	Calm	....do	
	7 p. m.	— 8	.....	NNW 1	....do	

APRIL—OCTOBER, 1868.

Locality.	Date.	Ther. 5.	Bar.	Wind.	Sky.	Remarks.
	1868.	c	*In.*			
13th Igloo.	Apr. 6, m.	.....	.....	.....	.....	
Near N. Ooglit Island.						
14th Igloo.	7, 7 a. m.	.....	.....	WNW 4	Clear	
Ooglit Islands.						
Lat. 68° 58′.9 N.						
Long. 80° 40′ W.						
5th Igloo,	20, 7 a. m.	— 5	.....	W 1	.....	Hazy.
Brevoort River.	m.	0	.....	W 1	.....	Hazy.
Lat. 69° 42′ N.	7 p. m.	— 10	.....	.....	.....	
Long. 85° W.						
6th Igloo,	21, 9 a. m.	4	.....	Calm	Cloudy	
Encampment Bay.	m.	10	.....	SW 1	....do	Snow. Left thermometer on an island near the western entrance to Fury and Hecla Straits.
Lat. 69° 47′.5 N.						
Long. 85° 15′ W.						
Enc't No. 183.*	Aug. 27, 7 a. m.	36	.....	NNW 5	Few clouds .	Ther. lowest last night, 34°.
Low-tide Enc't.	m.	50	.....	NNW 6	....do	
Lat. 66° 29′.4 N.	7 p. m.	37	.....	N 6	Cloudy	
Do.....	28, 7 a. m.	36	.....	NW 2	... do	Ther. lowest last night, 32°.
	m.	47	.....	NW 5	....do	
	7 p. m.	36	.....	NW 3	....do	
Do.....	29, 7 a. m.	40	.....	NW 4	....do	Ther. lowest last night, 30°.
	m.	44	.....	NNW 5	Few clouds .	
	7 p. m.	35	.....	NNW 3	Clear	
Do.....	30, 7 a. m.	35	.....	NW 5	Few clouds .	Ther. lowest last night, 31°.
	m.	48	.....	NW 4	Clear	
	7 p. m.	40	.....	NW 2	Cloudy	
Do.....	31, 7 a. m.	38	.....	NW 1	... do	Ther. lowest last night, 36°.
Enc't No. 186,	Oct. 3, 7 a. m.	4	.....	Calm	.....	Fog; ther. lowest last night, 4°.
Talloon Enc't.	m.	11	.....	NNW 1	.....	Fog.
Lat. 66° 37′ N.	7 p. m.	7	.....	W 3	Cloudy	
Long. 86° 42′ W.	5, 7 a. m.	0	.....	NNW 4	....do	Drift; ther. lowest last night, 0°.
	m.	10	.....	NNW 6	....do	Drift.
	7 p. m.	7	.....	NNW 7	....do	Drift.
Do.....	6, 7 a. m.	12	.....	E 5	....do	Ther. lowest last night, 7°.
	m.	18	.....	NE 5	....do	
	7 p. m.	14	.....	N 3	Few clouds .	
Do.....	13, 7 a. m.	14	.....	NW 2	Overcast....	Snow; ther. lowest last night, 13°.
	m.	16	.....	NW 2	....do	Snow.
	7 p. m.	14	.....	NW 2	... do	Snow.
Do.....	14, 7 a. m.	— 2	.....	NNW 1	Cloudy	Ther. lowest last night, —4°.
	m.	12	.....	NNW 2	Overcast....	
	7 p. m.	6	.....	NW 3	....do	
Do.....	15, 7 a. m.	5	.....	NNW 2	Cloudy	Ther. lowest last night, —6°.
	m.	8	.....	NNW 6	... do	Drift.
	7 p. m.	3	.....	NNW 6	....do	Drift.
Do.....	16, 7 a. m.	0	.....	NNW 2	Few clouds .	Ther. lowest last night, —6°.
	m.	4	.....	NNW 2	Clear	
	7 p. m.	— 8	.....	NW 1	....do	Aurora.
Do.....	17, 7 a. m.	— 6	.....	N 1	Cloudy	Ther. lowest last night, —10°.
	m.	0	.....	NE 3	Overcast....	
	7 p. m.	— 3	.....	NNW 2	Clear	Aurora.
Do.....	18, 7 a. m.	0	.....	NW 6	Overcast....	Ther. lowest last night, —3°.
	m.	4	.....	NW 5	....do	
	7 p. m.	4	.....	NW 5	....do	
Do.....	23, 7 a. m.	6	.....	E 1	....do	Snow; ther. lowest last night, 0°.
	m.	18	.....	E 4	....do	Snow.
	7 p. m.	20	.....	E 4	... do	Snow.
Do.....	24, 7 a. m.	5	.....	NNW 7	Cloudy	Drift; ther. lowest last night, 3°.
	m.	8	.....	NNW 7	....do	Drift.
	7 p. m.	4	.....	NNW 7	....do	Drift.
Do.....	25, 7 a. m.	3	.....	NNW 7	Few clouds .	Drift; ther. lowest last night, 0°.
	m.	2	.....	NNW 6	Cloudy	Drift.
	7 p. m.	— 2	.....	NNW 3	Few clouds .	
Do.....	26, 7 a. m.	— 2	.....	NNW 7	Cloudy	Drift; ther. lowest last night, —4°.
	m.	0	.....	NNW 7	Clear	Drift.
	7 p. m.	— 3	.....	NNW 5	....do	Aurora.

* The numbers for Encampments beyond No. 65 are those given in the table which closes these observations.

OCTOBER—NOVEMBER, 1868.

Locality.	Date.	Ther.	Bar.	Wind.	Sky.	Remarks.
Enc't No. 186.	1868.	°	*In.*			
Talloon Enc't.	Oct. 27, 7 a. m.	3	.....	NNW 6	Few clouds	Drift; ther. lowest last night, —3°.
Lat. 66° 37′ N.	m.	3	.....	NNW 3	Cloudy	
Long. 86° 42′ W.	7 p. m.	4	.....	NNW 1	.. do	
Enc't No. 187.	31, 7 a. m.	— 7	.....	NNW 8	....do	Drift; ther. lowest last night, —7°.
Lake Enc't.	m.	— 5	.....	NNW 7	Few clouds .	Drift.
Lat. 66° 33′.5 N.	7 p. m.	— 10	.....	NNW 7	... do	Drift.
Long. 86° 34′ W.	Nov. 1, 7, a. m.	— 15	.....	NNW 6	Cloudy	Drift; ther. lowest last night, —15°.
	m.	— 11	.....	NNW 2	Few clouds .	
	7 p. m.	— 13	.....	NNW 1	....do	
Do.....	2, 7 a. m.	— 10	.....	NW 2	Clear	Ther. lowest last night, — 13°.
	m.	— 6	.....	NW 1	do	
	7 p. m.	— 12	.....	NNW 1	Few clouds .	
Do..... ..	3, 7 a. m.	— 10	.....	NE 2	Overcast....	Fog; ther. lowest last night, —12°.
	m.	— 7	.....	N 5	....do	Drift.
	7 p. m.	— 9	.....	N 6	.. do	Drift.
Do.....	4, 7 a. m.	— 17	.....	NNW 9	Cloudy	Drift; ther. lowest last night, —17°.
	m.	— 14	.....	NNW 10	Few clouds .	Drift.
	7 p. m.	— 15	.....	NNW 11	....do	Drift.
Do.....	5, 7 a. m.	— 20	.....	Calm	Clear	Ther. lowest last night, —20°.
	m.	— 17	.....	NNW 1	Few clouds	
	7 p. m.	— 25	.....	NNW 1	Clear	
Do.....	6, 7 a. m.	— 21	.....	Calm	Few clouds	Fog; ther. lowest last night, —20°.
	m.	— 18	.....	NNW 1	... do	Fog.
	7 p. m.	— 24	.....	NNW 1	Clear	
Do.....	7, 7 a. m.	— 12	.....	W 2	Overcast...	Fog; ther. lowest last night, —22°.
	m.	— 10	.....	W 1	... do	Fog.
	7 p. m.	— 13	.....	W 1	Few clouds .	
Do.....	8, 7 a. m.	— 17	.....	NNW 3	Cloudy	Ther. lowest last night, — 18°.
	m.	— 12	.....	NNW 6	Few clouds	
	7 p. m.	— 18	.....	NNW 5	....do	
Do.....	9. 7 a. m.	— 5	.....	S 1	Cloudy ...	Snow; ther. lowest last night, —12°.
	m.	— 10	.....	S 1	.. do	Snow.
	7 p. m.	— 15	.....	NNW 2	Clear	
Do.....	10, 7 a. m.	— 17	.....	NNW 1	Cloudy	Ther. lowest last night, — 17°.
	m.	— 16	.....	NNW 2	Few clouds .	
	7 p. m.	— 24	.....	NNW 1	Clear	
	On journey to Lyon's Inlet to November 29.					
Enc't No. 188.	11, 7 a. m.	— 27	.....	NNW 3	....do	Ther. lowest last night, —27°.
Lat. 66° 31′ N.	m.	— 24	.....	NNW 4	... do	
Long. 86° 7′.5 W.	7 p. m.	— 25	.....	NNW 3	.. do	
Enc't No. 189.	12, 7 a. m.	— 22	.....	NNW 3	Cloudy	Ther. lowest last night, —25°.
Lat. 66° 35′ N.	m.	— 18	.....	N 2	Few clouds .	
Long. 85° 36′ W.	7 p. m.	— 22	.....	N 5	....do	
Enc't No. 190.	13, 7 a. m.	— 14	.....	SW 3	Overcast....	Ther. lowest last night, —28°.
Lat. 66° 47′ N.	m.	— 12	.....	SW 7	Cloudy	
Long. 85° 25′ W.	7 p. m.	— 14	.....	SW 7	Clear	
Enc't No. 191.	14, 7 a. m.	— 12	.....	SW 5	Cloudy . ..	Ther. lowest last night, — 14°.
Lat. 66° 58′ N.	m.	— 10	.....	SW 2	....do	
Long. 85° 19′ W.						
Enc't No. 192.	15, 7 a. m.	0	.....	S 3	Overcast....	Ther. lowest last night, — 19°.
Lat. 66° 58′.5 N.	m.	2	.....	S 5	.. do	
Long. 85° 23′ W.	7 p. m.	4	.....	S 7	....do	Drift.
Do.....	16, 7 a. m.	4	.....	SW 7	....do	Drift.
	m.	12	.....	SW 8	...do	Drift.
	7 p. m.	15	.....	SW 7	.. do	Drift.
Enc't No. 193.	17, 7 a. m.	5	.....	E 1	Few clouds	
Lat. 66° 59′ N.	m.	14	.....	W 1	Cloudy	
Long. 85° W.	7 p. m.	12	.....	W 1	.....	Hazy; snow.
Do.....	18, 7 a. m.	4	.....	NNW 1	Few clouds .	Ther. lowest last night, 4°.
	m.	14	.....	NE 1	Overcast...	Fog.
	7 p. m.	20	.....	NE 2	...do	Fog.
Enc't No. 194.	19, 7 a. m.	24	.....	E 1	.. do	
Lat. 67° 1′ N.	m.	20	.....	SE 1	Cloudy	
Long. 84° 52′ W.	7 p. m.	18	.....	E 4	.. do	
Enc't No. 195.	20, 7 a. m.	20	.....	SE 5	Overcast...	Fog.
Lat. 66° 56′.5 N.	m.	.....	.....	SSW 7	.....	Drift.
Long. 84° 15′ W.	7 p. m.	.....	.....	S 5	.....	Aurora.
Enc't No. 196.	22, 7 a. m.	— 6	.....	NNW 2	Cloudy	Ther. lowest last night, —6°.
Lat. 67° N.	7 p. m.	8	.....	NE 1	Overcast ..	Snow.
Long. 84° 52′ W.	23, 7 a. m.	8	.....	NE 2	.. do	Fog; ther. lowest last night, 8°.
	m.	5	.....	N 2	do	Fog.
	7 p. m.	— 6	.....	NNW 4	Few clouds	

NOVEMBER—DECEMBER, 1868.

Locality.	Date.	Ther. 5.	Bar.	Wind.	Sky.	Remarks.
	1868.	°	*In.*			
Enc't No. 196.	Nov. 24, 7 a. m.	0	.....	NNW 4	Overcast....	Ther. lowest last night, —8°.
Lat. 67° N.	m.	.....	.....	NNW 4	...do	
Long. 84° 52′ W.	7 p. m.	— 2	.....	NNW 2	.. do	
Do.....	25, 7 a. m	5	.....	NE 8	.....	Drift; snow.
	m.	8	.....	NE 7	.....	Drift; snow.
	7 p. m.	2	.....	E 7	.....	Drift; snow.
Enc't No. 197.	26, 7 a. m.	16	.....	E 4	Overcast....	
Lat. 66° 58′ N.	m.	20	.....	E 5	....do	Snow.
Long. 85° 19′ W.	7 p. m.	10	.....	NNW 1	.....	
Enc't No. 198.	27, 7 a. m.	— 10	.....	NW 1	Few clouds .	Ther. lowest last night, —10°.
Lat. 66° 47′ W.	m.	0	.....	NE 1	Overcast...	
Long. 85° 25′ N.	7 p. m.	4	.....	NE 3	do	Snow.
Enc't No. 199.	28, 7 a. m.	— 10	.....	SW 2	Cloudy	Ther. lowest last night, —10°.
Lat. 66° 35′ W.	m.	— 16	.....	SW 4	Few clouds .	
Long. 85° 36′ N.	7 p. m.	— 20	.....	SW 2	Cloudy	
Enc't No. 200.	29, 7 a. m.	— 20	.....	.....	.....	
Lat. 66° 33′.5 N.	7 p. m.	— 20	.....	.....	.....	
Long. 86° 34′ W.						
Do.....	30, 7 a. m.	— 20	.....	NNW 2	Cloudy	
	m.	— 18	.....	WNW 1	...do	
	7 p. m.	— 22	.....	NW 1	.. do	
Do.....	Dec. 3, 7 a. m.	5	.....	SSE 2	Overcast....	
	m.	4	.....	SSE 2	....do	
	7 p. m.	8	.....	SE 1	....do	
Do.....	4, 7 a. m.	8	.....	SE..... 2	.. do	Snow.
	m.	10	.....	E 3	....do	Snow.
	7 p. m.	10	.....	ESE 2	....do	Snow.
Do.....	5, 7 a. m.	8	.....	E 3	....do	Snow; ther. lowest last night, 8°.
	m.	5	.....	E 4	....do	Snow.
	7 p. m.	2	.....	ENE 7	....do	Drift.
Do.....	6, 7 a. m.	— 6	.....	NW 5	...do	Drift.
	m.	— 10	.....	NW 9	...do	Drift.
	7 p. m.	— 12	.....	NW 9	Few clouds	
Do.....	7, 7 a. m.	— 20	.....	NNW 6	.. do	Drift; ther. lowest last night, —20°.
	m.	— 20	.....	NNW 9	Clear	Drift.
	7 p. m.	— 22	.....	NNW 9	Few clouds .	Drift.
Do.....	8, 7 a. m.	— 22	.....	NNW 8	Cloudy	Drift; ther. lowest last night, —22°.
	m.	— 21	.....	NNW 8	.....	
	7 p. m.	— 23	.....	N 9	.....	
Do.....	9, 7 a. m.	— 20	.....	N 9	Few clouds .	Drift; ther. lowest last night, —22°.
	m.	— 20	.....	N 9	....do	Drift.
	7 p. m.	— 22	.....	N 9	.. do	Drift.
Do	10, 7 a. m.	— 20	.....	NNW 6	Clear	Drift; ther. lowest last night, —20°.
	m.	— 18	.....	NNW 5	.. do	Drift.
	7 p. m.	— 23	.....	NW 7	....do	Drift; aurora.
Do.....	11, 7 a. m.	— 22	.....	N 5	Overcast....	Ther. lowest last night, —22°.
Do.....	14, 7 a. m.	— 26	.....	NNW 1	Few clouds	Ther. lowest last night, —26°.
	m.	— 22	.....	NW 1	Cloudy	
	7 p. m.	— 20	.....	NE 1	... do	
Do.....	15, 7 a. m.	— 4	.....	NE 1	Overcast....	Ther. lowest last night, —20°.
	m.	0	.....	SE 3	....do	
	7 p. m.	— 7	.....	NNW 3	...do	
Do.....	16, 7 a. m.	— 14	.....	NNW 6	....do	Drift; ther. lowest last night, —10°.
	m.	— 20	.....	NNW 7	Cloudy	Drift.
Do	19, 7 a. m.	— 21	.....	NW 3	Few clouds .	
	m.	— 22	.....	NNW 3	...do	
	7 p. m.	— 20	.....	NNW 1	.. do	
Do.....	20, 7 a. m.	— 24	.....	N 1	Cloudy	Ther. lowest last night, —24°.
	m.	— 23	.....	N 0	...do	
	7 p. m.	— 23	.....	N 5	...do	
Do.....	21, 7 a. m.	— 22	.....	N. by W....7	....do	Drift; ther. lowest last night, —22°.
	m.	— 23	.....	NW 6	Clear	Drift.
	7 p. m.	— 24	.....	NNW 6	Few clouds .	Drift.
Do.....	22, 7 a. m.	— 23	.....	NNW 6	Cloudy	Drift; ther. lowest last night, —23°.
	m.	— 23	.....	NW 6	....do	Drift.
	7 p. m.	— 18	.....	WNW 1	.. do	
Do.....	23, 7 a. m.	— 6	.....	ENE 1	.. do	Ther. lowest last night, —18°.
	m.	— 3	.....	ESE 2	....do	
	7 p. m.	— 3	.....	SE 1	....do	
Do.....	24, 7 a. m.	— 5	.....	N 1	Clear	Ther. lowest last night, —5°.
	m.	— 8	.....	N 2	Few clouds .	Fog.
	7 p. m.	— 4	.....	N 1	...do	

DECEMBER, 1868—JANUARY, 1869.

Locality.	Date.	Ther. 5.	Bar.	Wind.	Sky.	Remarks.
	1868.	°	*In.*			
Enc't No. 200.	Dec. 25, 7 a. m.	— 4	.....	SSE 4	Cloudy	Ther. lowest last night, —4°.
Lat. 66° 33′.5 N.	m.	— 4	.....	SE.....2	....do	
Long. 86° 34′ W.	7 p. m.	— 3	.....	SSE 3	....do	
Do.....	26, 7 a. m.	— 3	.....	SE.....1	Overcast....	Ther. lowest last night, —4°.
	m.	— 2	.....	Calm	....do	Snow.
	7 p. m.	0	.....	N.....3	....do	Snow.
Do.....	27, 7 a. m.	— 23	.....	NNW 2	Cloudy	Drift; ther. lowest last night, —23°.
	m.	— 28	.....	NNW 7	....do	Drift.
	7 p. m.	— 24	.....	NE 2	Clear	
Do.....	28, 7 a. m.	— 22	.....	N.....1	Cloudy	Ther. lowest last night, —25°.
	m.	— 22	.....	NW 1	Few clouds .	
	7 p. m.	— 22	.....	NNW 1	... do	
Do.....	29, 7 a. m.	— 21	.....	NW 2	Overcast....	Ther. lowest last night, —22°.
	m.	— 18	.....	N.....2	Cloudy	
	7 p. m.	— 22	.....	N.....7	Few clouds .	Drift.
Do.....	30, 7 a. m.	— 28	.....	NNW 6	Clear	Drift; ther. lowest last night, —28°.
	m.	— 22	.....	.....	.....	
	7 p. m.	— 18	.....	ENE 1	.....	
	1869.					
Do.....	Jan. 1, 7 a. m.	— 4	.....	WNW.....3	Overcast....	
	m.	— 10	.....	WNW.....1	Clear	
	7 p. m.	— 12	.....	NE 1	....do	
Do.....	2, 7 a. m.	— 11	.....	NNE 1	Overcast....	Ther. lowest last night, —12°.
	m.	— 12	.....	N.....3	....do	Snow.
	7 p. m.	— 14	.....	N.....6	... do	
Do.....	3, 7 a. m.	— 20	.....	NW 3	Cloudy	
	m.	— 17	.....	NNW 4	....do	
	7 p. m.	— 17	.....	N.....4	Overcast....	
Do.....	4, 7 a. m.	— 16	.....	N.....7	....do	Drift.
	m.	— 16	.....	N.....6	....do	Drift.
	7 p. m.	— 18	.....	N.....6	....do	Drift.
Do.....	5, 7 a. m.	— 15	.....	ENE 2	....do	Ther. lowest last night, —18°.
	m.	— 16	.....	ENE 2	....do	
	7 p. m.	— 18	.....	N.....1	.....	Hazy.
Do.....	6, 7 a. m.	— 22	.....	N.....8	Few clouds .	Drift; ther. lowest last night, —22°.
	m.	— 25	.....	N.....7	....do	Drift.
	7 p. m.	— 30	.....	N.....7	....do	Drift.
Do.....	7, 7 a. m.	— 30	.....	N.....3	Cloudy	Ther. lowest last night, —31°.
	m.	— 20	.....	E 2	... do	
	7 p. m.	— 20	.....	N.....3	....do	
Do.....	8, 7 a. m.	— 28	.....	N. by E.....2	....do	Ther. lowest last night, —28°.
	m.	— 28	.....	N.....3	....do	
	7 p. m.	— 32	.....	N 4	....do	
Do	9, 7 a. m.	— 34	.....	NNW 8	....do	Drift; ther. lowest last night, —34°.
	m.	— 35	.....	NNW 7	....do	Drift.
	7 p. m.	— 36	.....	NNW 8	Clear	Drift.
Do.....	10, 7 a. m.	— 34	.....	NNW 7	Cloudy	Drift; ther. lowest last night, —38°.
	m.	— 34	.....	NNW 6	....do	Drift.
	7 p. m.	— 32	.....	NW 4	Clear	Aurora.
Do	11, 7 a. m.	— 33	.....	NW 3	Cloudy	Ther. lowest last night, —33°.
	m.	— 30	.....	NW 3	Few clouds .	
	7 p. m.	— 28	.....	WNW.....3	Clear	
Do.....	12, 7 a. m.	— 27	.....	Calm	Few clouds .	Ther. lowest last night, —28°.
	m.	— 23	.....	Calm	....do	
	7 p. m.	— 21	.....	Calm	Clear	
Do.....	13, 7 a. m.	— 28	.....	Calm	Few clouds .	Ther. lowest last night, —28°.
	m.	— 26	.....	Calm	....do	
	7 p. m.	— 25	.....	Calm	Cloudy	
Do	14, 7 a. m.	— 14	.....	SE.....1	... do	Ther. lowest last night, —27°.
	m.	— 12	.....	SE..... 2	....do	
	7 p. m.	— 15	.....	NW 3	Few clouds .	
Enc't No. 201.	15, 2 a. m.	— 8	.....	NW 5	Cloudy	Drift; ther. lowest last night, —15°.
Lat. 66° 37′ N.	m.	— 12	.....	NW 4	....do	
Long. 86° 42′ W.	7 p. m.	— 14	.....	NW 1	... do	
Do.....	16, 7 a. m.	— 17	.....	ESE 2	....do	Ther. lowest last night, —18°.
	m.	— 14	.....	ESE 2	....do	
	7 p. m.	— 17	.....	ESE 1	Clear	
Do	17, 7 a. m.	— 16	.....	NNW 9	Cloudy	Ther. lowest last night, —17°.
	m.	— 20	.....	NNW 7	Few clouds .	
	7 p. m.	— 22	.....	NNW 7	Cloudy	
Do.....	18, 7 a. m.	— 26	.....	NW 2	Overcast....	Ther. lowest last night, —27°.
	m.	— 20	.....	N.....2	Cloudy	
	7 p. m.	— 22	.....	N.....1	....do	

JANUARY—FEBRUARY, 1869.

Locality.	Date.	Ther. 5.	Bar.	Wind.	Sky.	Remarks.
	1869.	°	*In.*			
Enc't No. 201.	Jan. 19, 7 a. m.	— 37	.....	NNW 7	Few clouds .	Drift; ther. lowest last night,—37°.
Lat. 66° 37′ N.	m.	— 36	.....	NNW 7	... do	Drift.
Long. 86° 42′ W.	7 p. m.	— 36	.....	NW 7	....do	Drift.
Do.....	20, 7 a. m.	— 35	.....	NW 8	....do	Drift; ther. lowest last night,—37°.
	m.	— 32	.....	NW 7	....do	Drift.
	7 p. m.	— 32	.....	NW 8	....do	Drift.
Do.....	21, 7 a. m.	— 30	.....	NW 9	... do	Drift; ther. lowest last night,—32°.
	m.	— 29	.....	NNW 8	....do	Drift.
	7 p. m.	— 32	.....	NNW 8	.. do	Drift.
Do.....	22, 7 a. m.	— 34	.....	NW 5	Cloudy	Drift; ther. lowest last night,—34°.
	m.	— 34	.....	NW 8	... do	Drift.
	7 p. m.	— 35	.....	NW 8	Few clouds .	Drift.
Do.....	23, 7 a. m.	— 17	.....	NW 10	....do	Drift; ther. lowest last night,—35°.
	m.	— 10	.....	NNW 10	....do	Drift.
	7 p. m.	— 7	.....	N. by W...11	....do	Drift.
Do.....	24, 7 a. m.	— 10	.....	NW 11	.....	Drift; ther. lowest last night,—10°.
	m.	— 9	.....	NW 11	....	Drift.
	7 p. m.	— 9	.....	NW 11	....	Drift.
Do.....	25, 7 a. m.	— 16	.....	NW 11	.....	Drift; ther. lowest last night,—16°.
	m.	— 16	.....	NW 11	.....	Drift.
	7 p. m.	— 15	.....	NW 11	.....	Drift.
Do.....	26, 7 a. m.	— 16	.....	NW 10	Few clouds .	Drift; ther. lowest last night,—16°.
	m.	— 16	.....	NW 9	....do	Drift.
	7 p. m.	— 16	.....	NW 9	Cloudy	Drift.
Do.....	27, 7 a. m.	— 10	.....	NW 8	Few clouds .	Drift; ther. lowest last night,—16°.
	m.	— 10	.....	NW 8	....do	Drift.
	7 p. m.	— 9	.....	NW 8	Clear	Drift.
Do.....	28, 7 a. m.	— 18	.....	NW 8	Few clouds .	Drift; ther. lowest last night,—19°.
	m.	— 17	.....	NW 7	....do	Drift.
	7 p. m.	— 20	.....	NW 7	Clear	Drift.
Do.....	29, 7 a. m.	— 20	.....	NNW 5	Cloudy	Ther. lowest last night, —20°.
	m.	— 18	.....	NNW 3	... do	
	7 p. m.	— 21	.....	NNW 1	Few clouds .	
Do.....	30, 7 a. m.	— 8	.....	Calm	Cloudy	Ther. lowest last night, —21°.
	m.	— 6	.....	Calm	Overcast ..	
	7 p. m.	— 6	.....	SE.....1	... do	
Do.....	31, 7 a. m.	— 4	.....	SE..... 2	... do	Snow; ther. lowest last night, —6°.
	m.	— 4	.....	SE.....3	....do	
	7 p. m.	— 10	.....	NW 4	Few clouds .	
Do.....	Feb. 1, 7 a. m.	— 20	.....	NW 5	....do	Ther. lowest last night, —20°.
	m.	— 28	.....	NW 3	....do	
	7 p. m.	— 20	.....	NW 1	Clear	
Do.....	2, 7 a. m.	— 24	.....	SE.....2	Cloudy	Ther. lowest last night, —29°.
	m.	— 17	.....	SE..... 1	Few clouds .	
	7 p. m.	— 18	.....	SE..... 2	... do	
Do.....	3, 7 a. m.	0	.....	SE.....4	Overcast....	Snow; ther. lowest last night,—18°.
	m.	1	.....	SE..... 3	....do	Snow.
	7 p. m.	— 4	.....	NW 2	....do	
Do.....	4, 7 a. m.	— 14	.....	NW 3	....do	Ther. lowest last night, —14°.
	m.	— 13	.....	NW 5	....do	
	7 p. m.	— 16	.....	NW 6	....do	Drift.
Do.....	5, 7 a. m.	— 30	.....	N..... 1	Clear	Ther. lowest last night, —30°.
	m.	— 30	.....	NNW 1	....do	
	7 p. m.	— 34	.....	NNW 1	....do	
Do.....	6, 7 a. m.	— 38	.....	NNW 3	Cloudy	Ther. lowest last night, —38°.
	m.	— 36	.....	NNW 9	....do	
	7 p. m.	— 35	.....	NNW 4	Clear	
Do.....	7, 7 a. m.	— 35	.....	NNW 2	....do	Ther. lowest last night, —35°.
	m.	— 33	.....	NNW 2	....do	
	7 p. m.	— 35	.....	NNW 1	Cloudy	
Do.....	8, 7 a. m.	— 20	.....	SE..... 2	Overcast....	Snow; ther. lowest last night,—37°.
	m.	— 10	.....	SW.....1	....do	Snow.
	7 p. m.	— 24	.....	NNW 6	Clear	Drift.
Do.....	9, 7 a. m.	— 28	.....	NW 9	Few clouds .	Drift; ther. lowest last night,—28°.
	m.	— 30	.....	NW 8	....do	Drift.
	7 p. m.	— 34	.....	NW 7	Clear	Drift.
Do.....	10, 7 a. m.	— 37	.....	NNW 1	....do	Ther. lowest last night, —37°.
	m.	— 28	.....	NNW 2	Few clouds .	
	7 p. m.	— 26	.....	NNW 2	....do	
Do.....	11, 7 a. m.	— 38	.....	NNW 3	... do	Ther. lowest last night, —38°.
	m.	— 30	.....	NNW 3	Cloudy	
	7 p. m.	— 35	.....	NNW 4	Clear	

FEBRUARY—MARCH, 1869.

Locality.	Date.	Ther. 5.	Bar.	Wind.	Sky.	Remarks.
	1869.	°	*In.*			
Encl't No. 201.	Feb. 12, 7 a. m.	— 40	.....	NNW 1	Clear	Ther. lowest last night, —41°.
Lat. 66°37′ N.	m.	— 36	.....	NNW 3	...do	
Long. 86° 42′ W.	7 p. m.	— 42	.....	NNW 1	...do	
Do.....	13, 7 a. m.	— 48	.....	Calm	....do	Ther. lowest last night, —48°.
	m.	— 38	.....	NW 1	....do	
	7 p. m.	— 44	.....	NNW 1	....do	
Do.....	14, 7 a. m.	— 37	.....	NNW 6	Few clouds .	Drift; ther. lowest last night, —44°.
	m.	— 35	.....	NNW 7	Clear	Drift.
	7 p. m.	— 40	.....	NNW 7	....do	Drift.
Do.....	15, 7 a. m.	— 39	.....	NNW 7	... do	Drift; ther. lowest last night, —40°.
	m.	— 36	.....	NNW 7	Few clouds .	Drift.
	7 p. m.	— 38	.....	NNW 5	.. do	Drift.
Do.....	16, 7 a. m.	— 26	.....	NNW 8	.. do	Drift; ther. lowest last night, —36°.
	m.	— 24	.....	NNW 9	....do	Drift.
	7 p. m.	— 20	.....	NNW 10	....do	Drift.
Do.....	17, 7 a. m.	— 24	.....	NW 6	Clear	Drift; ther. lowest last night, —20°.
	m.	— 25	.....	NW 5	....do	
	7 p. m.	— 28	.....	NW 1	Few clouds .	
Do.....	18, 7 a. m.	— 21	.....	SE.....2	Overcast ..	Fog; ther. lowest last night, —28°.
	m.	— 20	.....	SE.....5	... do	Snow.
	7 p. m.	— 18	.....	SE.....5	....do	Snow.
Do.....	19, 7 a. m.	— 32	.....	NNW 6	....do	Drift; ther. lowest last night, —32°.
	m.	— 30	.....	NNW 7	....do	Drift.
	7 p. m.	— 32	.....	NNW 6	....do	Drift.
Do.....	20, 7 a. m.	— 38	.....	NNW 7	Few clouds .	Drift; ther. lowest last night, —38°.
	m.	— 36	.....	NNW 7	....do	Drift.
	7 p. m.	— 38	.....	NNW 5	Clear	Drift.
Do.....	21, 7 a. m.	— 40	.....	NNW 5	Few clouds .	Drift; ther. lowest last night, —40°.
	m.	— 36	.....	NNW 6	Clear	Drift.
	7 p. m.	— 40	.....	NNW 5	....do	Drift.
Do.....	22, 7 a. m.	— 44	.....	NNW 7	....do	Drift; ther. lowest last night, —44°.
	m.	— 40	.....	NNW 6	.. do	Drift.
	7 p. m.	— 42	.....	NNW 7	.. do	Drift.
Do.....	23, 7 a. m.	— 29	.....	NNW 6	Overcast....	Drift; ther. lowest last night, —42°.
	m.	— 26	.....	NNW 6	Cloudy	Drift.
	7 p. m.	— 32	.....	NNW 2	Few clouds .	
Do.....	24, 7 a. m.	— 20	.....	SE 1	Cloudy	Ther. lowest last night, —32°.
	m.	— 17	.....	SE.....3	... do	
	7 p. m.	— 18	.....	SE.....2	....do	
Do.....	25, 7 a. m.	— 18	.....	SE 1	Overcast....	Ther. lowest last night, —18°.
	m.	— 15	.....	NNW 2	Few clouds .	
	7 p. m.	— 21	.....	NNW 2	Cloudy	
Do.....	26, 7 a. m.	— 32	.....	NNW 1	....do	Ther. lowest last night, —32°.
	m.	— 14	.....	SE 1	....do	
	7 p. m.	— 14	.....	SE.....1	....do	
Do	27, 7 a. m.	— 11	.....	SE 4	Overcast....	Snow; ther. lowest last night, —14°.
	m.	— 6	.....	SE.....4	....do	Snow.
	7 p. m.	— 9	.....	SE 4	Few clouds .	
Do.....	28, 7 a. m.	— 12	.....	NW 5	.. do	Ther. lowest last night, —17°.
	m.	— 14	.....	NW 6	...do	
	7 p. m.	— 25	.....	NNW 5	Clear	Drift; aurora.
Do.....	Mar. 1, 7 a. m.	— 25	.....	NNW 1	Few clouds .	Ther. lowest last night, —28°.
	m.	.....	.....	Calm	... do	
	7 p. m.	.....	.....	NW 1	....	Fog.
Do.....	2, 7 a. m.	.....	.....	NE 1	....	Fog.
	m.	.....	.....	E 6	Cloudy	Drift.
	7 p. m.	.....	.....	E 4	Overcast...	
Do	3, 7 a. m.	.....	.....	NW 2	Few clouds .	
	m.	.....	.....	NW 6	.. do	
	7 p. m.	.....	.....	NW 2	Clear	
Do.....	4, 7 a. m.	.....	.....	NW 6	Overcast....	Drift; fog.
	m.	.....	.....	E 5	Cloudy	Drift.
	7 p. m.	— 18	....	NW 1	Few clouds .	
Do.....	5, 7 a. m.	— 18	.....	SE 3	...do	Ther. lowest last night, —19°
	m.	— 10	.....	SE.....3	.. do	
	7 p. m.	— 9	.....	SE.....4	Overcast ...	
Do.....	6, 7 a. m.	— 17	.....	Calm	Cloudy	Ther. lowest last night, —18°
	m.	— 15	.....	NNW 5	.. do	Drift.
	7 p. m.	— 20	.....	NNW 6	....	Drift; hazy.
Do.....	7, 7 a. m.	— 20	.....	NNW ... 10	....	Drift; ther. lowest last night, —20°.
	m.	— 7	.....	NNW 10	....	Drift.
	7 p. m.	— 5	.....	NNW ... 10	....	Drift.

MARCH—APRIL, 1869.

Locality.	Date.	Ther. 5.	Bar.	Wind.	Sky.	Remarks.
	1869.	°	*In.*			
Enc't No. 201.	Mar. 8, 7 a. m.	3	.....	S 2	Overcast...	Ther. lowest last night, —5°.
Lat. 66° 37′ N.	m.	12	.....	Calm	... do	
Long. 86° 42′ W.	7 p. m.	.....	.....	E 4	...do	Snow.
Do.....	9, 7 a. m.	.....	.....	E 3	Few clouds	
	m.	.....	.....	E 6	Clouds.....	Drift.
Do.....	10, 7 a. m.	.....	.....	E 3	Fog.....	
	m.	.....	.....	NW 2	Few clouds	
	7 p. m.	.....	.....	NW 2	Clear	
Do.....	11, 7 a. m.	.....	.....	NW 5	Cloudy ...	
	m.	.....	.....	NNW 6	Few clouds	Drift.
	7 p. m.	— 15	.....	NNW 2	.. do	
Do.....	12, 7 a. m.	— 2	.....	NNW 1	Cloudy	Ther. lowest last night, —15°.
	m.	0	.....	NNW 3	Few clouds	
	7 p. m.	— 10	.....	NNW 2	Clear	
Do.....	13, 7 a. m.	— 26	.....	NNW 2	Few clouds	Ther. lowest last night, —29°.
	m.	— 4	.....	NNW 1	Clear	
	7 p. m.	— 17	.....	Calm	.. do	
Do.....	14, 7 a. m.	— 26	.....	NNW 3	Cloudy . ..	Ther. lowest last night, —27°.
	m.	— 6	.....	NW 1	Few clouds	
Do.....	15, 7 a. m.	.....	.....	NW 1	...do	
	m.	.....	.....	N 3	Clear	
	7 p. m.	— 15	.....	NNW 5	Few clouds	
Do.....	16, 7 a. m.	— 18	.....	NW 6	...do	Drift; ther. lowest last night —26°.
	m.	— 8	.....	NW 5	Clear	Drift.
	7 p. m.	— 19	.....	NNW 5	.. do	Drift.
Do.....	17, 7 a. m.	— 20	.....	NNW 4	Few clouds	Ther. lowest last night, —24°.
	m.	— 7	.....	NNW 2	Clear	
	7 p. m.	— 18	.....	Calm	Few clouds	
Do.....	18, 7 a. m.	— 12	.....	SE..... 2	Overcast ..	Snow; ther. lowest last night, —21°.
	m.	7	.....	S 3	... do	Snow.
	7 p. m.	4	.....	S 4	...do	Snow.
Do.....	19, 7 a. m.	— 4	.....	Calm	Few clouds	Ther. lowest last night, —4°.
	m.	3	.....	NW 3	Cloudy	
	7 p. m.	— 5	.....	NNW 3	Overcast...	[night, —3°.
Do.....	20, 7 a. m.	0	.....	NNW 7	....do	Drift; snow; ther. lowest last
	m.	— 12	.....	NNW 8	...do	Drift; snow.
	7 p. m.	— 15	.....	NNW 7	Cloudy	Drift.
	Observations on sledge-journey to King William's Land.					
Enc't No. 202.	*23, 7 a. m.	— 24	.....	NNW 6	Few clouds	Drift; ther. lowest last night, —24°.
N. Pole Lake.	m.	— 16	.....	NNW 8	Clear	Drift.
	7 p. m.	— 25	.....	NNW 7	Cloudy	Drift.
Enc't No. 203.	24, 7 a. m.	— 22	.....	NNW 6	Overcast...	Drift; ther. lowest last night, —26°.
Same.	m.	— 16	.....	NNW 6	Cloudy	Drift.
	7 p. m.	— 20	.....	NNW 6	.. do	Drift.
Enc't No. 204.	25, 7 a. m.	— 15	.....	NW 6	Overcast...	Drift; ther. lowest last night, —21°.
Christie Lake.	m.	— 5	.....	NW 2	Few clouds	
	7 p. m.	— 14	.....	NW 1	.. do	
Enc't No. 206.	27, 7 a. m.	— 22	.....	SW.....1	Clear	Ther. lowest last night, —24°.
Miles Lake.	m.	1	.....	SW.....3	.. do	
	7 p. m.	— 12	.....	SW.....4	....do	
Do...	28, 7 a. m.	— 18	.....	SW.....4	. do	Ther. lowest last night, —27°.
	m.	— 4	.....	SW.....1	. do	
	7 p. m.	— 10	.....	SW..... 1	.. do	
Enc't No. 207.	29, 7 a. m.	— 31	.....	Calm	.. do	Ther. lowest last night, —35°.
	m.	— 14	.....	NNW 2	.. do	
	7 p. m.	— 30	.....	NNW 1	.. do	
Enc't No. 208.	30, 7 a. m.	— 30	.....	NW 1	Cloudy	Ther. lowest last night, —33°.
Near Cape	m.	— 15	.....	NW 2	Few clouds	
Lady Pelly.	7 p. m.	— 21	.....	NNW 1	Clear	
Enc't No. 209.	31, 7 a. m.	— 22	.....	NNW 1	.. do	Ther. lowest last night, —27°.
	m.	— 12	.....	W 2	.. do	
	7 p. m.	— 24	.....	W 1	....do	
Enc't No. 210.	Apr. 1, 7 a. m.	— 20	.....	NW 1	....do	Ther. lowest last night, —27°.
	m.	— 14	.....	W 1	....do	
	7 p. m.	— 29	.....	W 1	do	
Enc't No. 211.	2, 7 a. m.	— 18	.....	W 1	Cloudy	Ther. lowest last night, —32°.
	m.	— 12	.....	W 1	Clear	
	7 p. m.	— 28	.....	W 1	...do	
Do.....	3, 7 a. m.	— 29	.....	W 1	.. do	Ther. lowest last night, —32°.
	m.	— 15	.....	Calm	...do	
	7 p. m.	— 23	.....	W 1	.. do	

*Hall discovers that he has lost two days; probably some time in the winter.

APRIL, 1869.

Locality.	Date.	Ther. 5.	Bar.	Wind.	Sky.	Remarks.
	1869.	°	*In.*			
Enc't No. 212.	Apr. 4, 7 a. m.	— 24	.....	WNW.....2	Cloudy	Fog; ther. lowest last night,—33°.
	m.	5	.....	SE 5	.....	Snow.
	7 p. m.	0	.....	SE 9	.....	Snow; drift.
Enc't No. 213.	5, 7 a. m.	15	.....	SE 5	Overcast....	Snow; ther. lowest last night, 0°.
Lat. 68° 7′ N.	m.	20	.....	SE 4	....do	Snow.
Long. 88° 48′ W.	7 p. m.	10	.....	SE 4	....do	Snow.
Enc't No. 214.	6, 7 a. m.	17	.....	SE 1	....do	Snow; ther. lowest last night, 0°.
Lat. 68° 15′ N.	m.	27	.....	SE 1	....do	
Long. 89° 17′ W.	7 p. m.	19	.....	SE 1	....do	Snow.
Enc't No. 215.	7, 7 a. m.	10	.....	WNW.....3	....do	Thick weather; ther. lowest last night, 2°.
Lat. 68° 22′.5 N.						
Long. 89° 42′ W.	m.	6	.....	SW 4	....do	Snow.
	7 p. m.	— 6	.....	SW 6	....do	Drift.
Enc't No. 216.	8, 7 a. m.	— 4	.....	W 2	....do	Ther. lowest last night, —10°.
Lat. 68° 26′ N.	m.	4	.....	NW 2	....do	
Long. 89° 53′ W.	7 p. m.	— 2	.....	NW 4	....do	
Enc't No. 217.	9, 7 a. m.	10	.....	NW 1	....do	Ther. lowest last night, —2°.
Lat. 68° 28′ N.	m.	14	.....	W 3	....do	Snow.
Long. 90° 7′ W.	7 p. m.	0	.....	N..... 1	.....	
Do.....	10, 7 a. m.	2	.....	Calm	Overcast....	Fog; ther. lowest last night, 0°.
	m.	20	.....	Calm	... do	
	7 p. m.	6	.....	Calm	....do	Snow.
Enc't No. 218.	11, 7 a. m.	8	.....	SW 3	....do	Snow ther. lowest last night,—1°.
Lat. 68° 30′.5 N.	m.	9	.....	W 6	... do	Drift.
Lon. 90° 28′ 5 W.	7 p. m.	— 15	.....	NW 7	Few clouds .	Drift.
Do.....	12, 7 a. m.	— 14	.....	W 6	....do	Drift; ther. lowest last night,—24°.
	m.	— 8	.....	W 7	....do	Drift.
	7 p. m.	— 18	.....	W 1	Clear	
Enc't No. 219.	13, 7 a. m.	— 22	.....	N.....2	Few clouds .	Ther. lowest last night, —33°.
Lat. 68° 29′ N.	m.	— 11	.....	N.....3	....do	
Long. 90° 44′ W.	7 p. m.	— 20	.....	N. 4	Clear	
Enc't No. 220.	14, 7 a. m.	— 17	.....	NNE 4	Few clouds .	Ther. lowest last night, —23°.
Lat. 68° 26′ N.	m.	— 10	.....	NNE 3	....do	
Lon. 91° 07′.5 W.	7 p. m.	— 18	.....	NW 2	....do	
Do.....	15, 7 a. m.	— 18	.....	W 8	.....	Drift; ther. lowest last night,—26°.
	m.	— 12	.....	W 9	.....	Drift.
	7 p. m.	— 16	.....	W 9	.....	Drift.
Do.....	16, 7 a. m.	.....	.....	W 9	.....	
	m.	.....	.....	W 9	.....	
	7 p. m.	.....	.....	W 9	.....	
Enc't No. 221.	17, 7 a. m.	— 9	.....	W 4	Few clouds .	Ther. lowest last night, —20°.
Lat. 68° 31′ N.	m.	0	.....	W 2	....do	
Long. 91° 30′ W.	7 p. m.	— 6	.....	E 4	.....	Haze.
Do.....	18, 7 a. m.	— 16	.....	W 3	Cloudy	Ther. lowest last night, —16°.
	m.	20	.....	NE 4	Overcast ..	Snow.
	7 p. m.	14	.....	NE 5	....do	Snow. [night, 4°.
Do.....	19, 7 a. m.	4	.....	NE 6	....do	Drift: snow; ther. lowest last
	m.	12	.....	NE 5	....do	Drift.
	7 p. m.	1	.....	NE 5	....do	Drift.
Do.....	20, 7 a. m.	2	.....	NE 7	....do	Drift; ther. lowest last night,—6°.
	m.	14	.....	NE 7	.. do	Drift.
	7 p. m.	— 2	.....	NE 7	.. do	Drift.
Do	21, 7 a. m.	4	.....	NE 5	.. do	Fog.
	m.	22	.....	E 2	.....	Fog; haze.
	7 p. m.	— 5	.....	NW 1	Few clouds .	
Enc't No. 222.	22, 7 a. m.	— 5	.....	W 1	Clear	Ther. lowest last night, —20°.
Lat. 68° 36′ N.	m.	2	.....	E 2	.. do	
Long. 92° 3′ W.	7 p. m.	0	.....	S 2	Cloudy	
Do	23, 7 a. m.	7	.....	W 8	Overcast....	Drift.
	m.	17	.....	W 8	.. do	Drift.
	7 p. m.	10	.....	W 7	do	Drift.
Enc't No. 223.	24, 7 a. m.	13	.....	W 1	Cloudy ..	
Lat. 68° 24′ N.	m.	30	.....	E 6	.. do	Drift.
Long. 92° 22′ W.	7 p. m.	10	.....	E 3	do	
Enc't No. 224.	25, 7 a. m.	24	.....	SW 1	Overcast...	Ther. lowest last night, 8°.
Lat. 68° 30′ N.	m.	29	.....	E 2	....do	Snow.
Long. 92° 45′ W.	7 p. m.	12	.....	W 3	.. do	
Do.....	26, 7 a. m.	5	.....	W 1	Cloudy	Ther. lowest last night, 3°.
	m.	12	.....	W 2	Few clouds .	
	7 p. m.	— 2	.....	W 3	....do	
Enc't No. 225.	27, 7 a. m.	— 9	.....	W 2	Clear	Ther. lowest last night, —15°.
Lat. 68° 36′ N.	m.	6	.....	W 5	Few clouds .	Fog.
Long. 93° 29′ W.	7 p. m.	— 5	.....	W 2	Clear	

APRIL, 1869.

Locality.	Date.	Ther. 5.	Bar.	Wind.	Sky.	Remarks.
	1869.	°	*In.*			
Enc't No. 226.	Apr. 28, 7 a. m.	2	.....	W 2	Cloudy	
Lat. 68° 38′ N.	m.	10	.....	SE.....3	....do	
Long. 93° 52′ W.	7 p. m.	7	.....	SE.....4	Overcast...	
Do.....	29, 7 a. m.	.....	.....	SE..... 7	....do	Snow.
	m.	20	.....	SE..... 7	....do	Snow.
	7 p. m.	.....	.....	SE.....6	....do	Snow.
Enc't No. 227.	30, 7 a. m.	17	.....	SE 4	Cloudy	
Lat. 68° 40′ N.	m.	23	.....	SE.....5	....do	Drift.
Long. 94° 06′.5 W.	7 p. m.	15	.....	SE.....5	....do	Drift.

Note explanatory of the break from April, 1867, to May, 1868.—By reference to page 320 (Chapter XI) it will be seen that Hall's journalizing during the latter part of the year 1867 and the first part of 1868 was occasional only. No meteorological notes are found for that period among his papers.

ENCAMPMENTS MADE BY HALL FROM THE DATE OF HIS LANDING IN THE ARCTIC REGIONS.

Total number.	Hall's number.	Date of making.	Name of the locality.	Nature of the habitation.	Number of days Hall remained.	Hall's observed latitude.	Hall's observed longitude.	Latitude obtained by D. R. and otherwise.	Longitude obtained by D. R. and otherwise.	Remarks.
		1864.				° ′	° ′	° ′	° ′	
1	.....	Aug. 20	Depot Island	Tupik	11	63 47.2 N.	89 51 W.	.....	.....	Lands from the bark Monticello on Depot Island.
2	1st	Aug. 31	W. shore of Rowe's Welcome.	....do	3	64 35.6 N.	87 32 W.	.....	.....	Leaves the Helen F. to take up his residence on shore.
3	2d	Sept. 3	..... do	....do	6	64 50 N.	87 15 W.	.....	.....	
4	3d	Sept. 9	Noo-wook	....do	9	64 46.3 N.	87 14 W.	.....	.....	
5	4th	Sept. 18	..... do	....do	21	64 46.5 N.	.....	.....	87 14 W.	
6	5th	Oct. 9	.....do	Igloo	38	64 46.3 N.	.....	.....	87 14 W.	
7	6th	Nov. 17	..... do	....do	106	64 45.8?N.	.....	.....	87 20 W.	Absent, January 9 to February 14, 1865, on a sledge journey to Depot Island, where the bark Monticello was wintering.
		1865.								
8	7th	Mar. 3	Noo-wook	Igloo	43	64 43.2?N.	.....	.....	87 20 W.	
9	8th	Apr. 15	Near Noo-wook	....do	9	64 55 N.	.....	.....	Insuf. data	Starts for Repulse Bay.
10	9th	Apr. 24	Near Wager Bay	... do	3	65 1.2 N.	.....	.....	87 34 W.	
11	10th	Apr. 27	..... do	....do	1	.....	.....	65 8 N.	87 47 W.	
12	11th	Apr. 28	.....do	....do	1	.....	.....	65 15 N.	88 18 W.	
13	12th	Apr. 29	Wager Bay	....do	2	.....	.....	65 19 N.	88 40 W.	
14	13th	May 1	.... do	Igloo and kongmong.	25	65 22.9 N.	.....	.....	88 53 W.	May 13 to 18, sledge journey to the 10th Encampment and return.
15	14th	May 26	.....do	....do	4	65 22.8 N.	.....	.....	88 41 W.	
16	15th	May 30	.....do	....do	6	65 19.3 N.	.....	.....	88 34 W.	
17	16th	June 5	.... do	....do	1	65 16.2 N.	.....	.....	87 19 W.	
18	17th	June 6	Rowe's Welcome	....do	1	65 22.8 N.	.....	.....	87 10 W.	
19	18th	June 7	..... do	....do	2	.....	.....	65 36 N.	86 37 W.	
20	19th	June 9	..... do	....do	2	.....	.....	65 44 N.	86 30 W.	
21	20th	June 11	Near Beach Point	Tupik	2	.....	.....	66 10 N.	85 55 W.	
22	21st	June 13	N. E. shore of Repulse Bay.	....do	18	66 15 N.	.....	.....	85 24 W.	
23	22d	July 1	Oo-gla-ri-your Island	... do	37	66 19 N.	.....	.....	85 29 W.	
24	23d	Aug. 7	N. shore of Repulse Bay ..	....do	18	66 30 N.	.....	.....	86 3 W.	
25	24th	Aug. 25	..... do	....do	9	66 28.9 N.	.....	.....	86 18.5 W.	
26	25th	Sept. 3	Near Talloon Bay	....do	1	.....	.....	66 30.5 N.	86 44.5 W.	
27	26th	Sept. 4	Fort Hope	Igloo	92	66 31.4 N.	.....	.....	86 56 W.	
28	27th	Dec. 5	Nowyarn	....do	55	.....	.....	66 30.5 N.	86 22 W.	
		1866.								
29	28th	Jan. 29	Nowyarn	Igloo	10	66 30.5 N.	.....	.....	86 23 W.	
30	29th	Feb. 8	Fort Hope	....do	51	66 30.2 N.	.....	.....	86 56 W.	Same Encamp't as No. 27.
31	30th	Mar. 31	North Pole River	....do	5	66 32.9 N.	86 56 W.	.....	.....	Starts for King William's Land.
32	31st	Apr. 5	North Pole Lake	....do	3	66 40 N.	87 4.7 W.	.....	.....	
33	32d	Apr. 8	Christie Lake	....do	3	66 47 N.	87 16.7 W.	.....	.....	

ENCAMPMENTS—Continued.

Total number.	Hall's number.	Date of making.	Name of locality.	Nature of the habitation.	Number of days Hall remained.	Hall's observed latitude.	Hall's observed longitude.	Latitude obtained by D. R. and otherwise.	Longitude obtained by D. R. and otherwise.	Remarks.
		1866.				° ′	° ′	° ′	° ′	
34	33d	Apr. 11	Rae Isthmus	Igloo	4	66 56.5 N.	87 30 W.			
35	34th	Apr. 15	Miles Lake	do	4	67 4.2 N.	87 41.5 W.			
36	35th	Apr. 19	Near Committee Bay	do	2	67 13.9 N.	87 31 W.			
37	36th	Apr. 21	Point Hargrave	do	3	67 24.5 N.	87 40.7 W.			
38	37th	Apr. 24	Swanston Point	do	5	67 36.7 N.	88 7.7 W.			
39	38th	Apr. 29	Committee Bay	do	1			67 49 N.	88 25 W.	
40	39th	Apr. 30	do	do	<1			67 55 N.	88 25 W.	
41	40th	Apr. 30	do	do	5	68 00 N.	88 18.7 W.			
42	41st	May 5	do	do	2					Same Encamp't as No. 40.
43	42d	May 7	do	do	1					Same Encamp't as No. 39.
44	43d	May 8	do	do	1			67 40 N.	88 17 W.	
45	44th	May 9	do	do	2			67 32 N.	87 53 W.	
46	45th	May 11		do	3			67 20 N.	87 52 W.	
47	46th	May 14		do	5	67 8.5 N.	87 41.7 W.			
48	47th	May 19	Miles Lake	do	2	66 59.9 N.			87 46 W.	
49	48th	May 21	Christie Lake	do	1			66 50 N.	87 23 W.	
50	49th	May 22	North Pole Lake	do	1					Same Encamp't as No. 32.
51	50th	May 23	Fort Hope	do	4		86 56 W.			Same Encamp't as No. 27.
52	51st	May 27	Iwillik	do	11	66 30.3 N.	86 34.5 W.			
53	52d	June 7	E-nook-shoo-lik	do	7	66 27.7 N.	86 21.7?W.			
54	53d	June 14	Iwillik	do	1	66 28.9 N.				Same Encamp't as No. 52.
55	54th	June 15	Fort Hope	do	3	66 30.8 N.				Same Encamp't as No. 27.
56	55th	June 18	Teekeera	do	4	66 25.4 N.			86 47.5 W.	
57		June 22	E-nook-shoo-lik	do	4			66 29 N.	86 12 W.	
58	56th	June 26	Sheglua	do	2			66 34 N.	85 36 W.	
59	57th	June 28	Kierngnuktoo	Tupik	7	66 25.2 N.			85 28 W.	
60	58th	July 5	Rock Knob	do	1	66 31.5 N.			85 34 W.	
61	59th	July 6	Pitiktouyer	do	5	66 29.5 N.			85 59.5 W.	
62	60th	July 11	E nook-shoo-lik	do	25	66 29.1 N.			86 12 W.	
63	61st	Aug. 5	N. of Ships' Harbor Islands	do	28	66 29.9 N.			86 6 W.	
64	62d	Sept. 2	N. shore of Repulse Bay	do	1			66 36 N.	86 28.5 W.	
65	63d	Sept. 3	Fort Hope	do	10					Same Encamp't as No. 27.
66		Sept. 13	Near 24th Encampment	do	1					See No. 25 for position.
67		Sept. 14	Near 23d Encampment	do	2					See No. 24 for position.
68		Sept. 16	Iwillik	do	4					Same Encamp't as No. 52.
69		Sept. 20	Fort Hope	Tupik and Igloo.	36					Same Encamp't as No. 27.
70	64th	Oct. 26	Talloon	Igloo	29			66 37 N.	86 42 W.	
71	65th	Nov. 24	Ships' Harbor Islands	do	75	66 26 N.			86 6 W.	
		1867.								
72	1st Igloo	Feb. 7	Near head of Haviland Bay	Igloo	3			66 35 N.	86 00? W.	Starts for Ig-loo-lik.
73	2d Igloo	Feb. 10	On a lake	do	1					
74	3d Igloo	Feb. 11	Ross Bay	do	1					

ENCAMPMENTS—Continued.

Total number.	Hall's number.	Date of making.	Name of locality.	Nature of the habitation	Number of days Hall remained.	Hall's observed latitude.	Hall's observed longitude.	Latitude obtained by D. R. and otherwise.	Longitude obtained by D. R. and otherwise.	Remarks.
		1867.				° ′	° ′	° ′	° ′	
75	4th Igloo	Feb. 12	Near Neebarbic Creek	Igloo	1					
76	5th Igloo	Feb. 13	On a lake	do	1					
77	6th Igloo	Feb. 14	On land	do	3					
78	7th Igloo	Feb. 17	Near Pinguarku Mountain	do	3					
79	8th Igloo	Feb. 20	On land	do	1					
80	9th Igloo	Feb. 21	Oosooarku	do	1					
81	10th Igloo	Feb. 22	On sea-ice	do	1					
82	11th Igloo	Feb. 23	Near Ingnuktoo	do	1					
83	12th Igloo	Feb. 24	Near Ooglit Isle	do	1					
84	13th Igloo	Feb. 25	On sea-ice	do	1					
85	14th Igloo	Feb. 26	Near Pingitkalik	do	1					
86	15th Igloo	Feb. 27	Igloolik	do	7					
87	16th Igloo	Mar. 6	Near Ig-loo-lik	do	4					
88	17th Igloo	Mar. 10	Tern Island	do	1					
89	18th Igloo	Mar. 11	Near Ig-loo-lik	do	5					Same Encamp't as No. 87.
90	1st Igloo of return	Mar. 16	do	do	2					
91	2d Igloo of return	Mar. 18	On sea-ice	do	1					
92	3d Igloo of return	Mar. 19	Tes-e-é-uk, name of new lake.	do	1					
93	4th Igloo of return	Mar. 20	On sea-ice	do	1					
94	5th Igloo of return	Mar. 21	On bay-ice west of Amitoke	do	1					
95	6th Igloo of return	Mar. 22	Oosooarku	do	2					
96	7th Igloo of return	Mar. 24	On land	do	1					
97	8th Igloo of return	Mar. 25	do	do	1					
98	9th Igloo of return	Mar. 26	Near Pinguarku Mountain	do	1					
99	10th Igloo of return	Mar. 27	On a lake	do	1					
100	11th Igloo of return	Mar. 28	Near Lyon's Inlet	do	2					
101	12th Igloo of return	Mar. 30	Ross Bay	do	1					
102	13th Igloo of return	Mar. 31	Near Haviland Bay	do	1					
103	65th Enc't	Apr. 1	Ships' Harbor Islands	do	30					See No. 71 for position.
104	1st Igloo	May 1	Fort Hope	do	1					Starts to visit his cache at Cape Weynton.
105	2d Igloo	May 2	Christie Lake	do	2					
106	3d Igloo	May 4	Miles Lake	do	2					
107	4th Igloo	May 6	On land	do	1					
108	5th Igloo	May 7	Cape Lady Pelly	do	1					
109	6th Igloo	May 8	Near Cape Weynton	do	3					
110	1st Igloo of return	May 11	On sea-ice	do	1					
111	2d Igloo of return	May 12	Cape Lady Pelly	do	1					
112	3d Igloo of return	May 13	do	do	1					
113	4th Igloo of return	May 14	Miles Lake	do	1					Same Encamp't as No. 106.
114	5th Igloo of return	May 15	Christie Lake	do	2					Near No. 105.
115	65th Enc't	May 17	Ships' Harbor Islands	do	7					See No. 71 for position.

ENCAMPMENTS—Continued.

Total number.	Hall's number.	Date of making.	Name of locality.	Nature of the habitation.	Number of days Hall remained.	Hall's observed latitude.	Hall's observed longitude.	Latitude obtained by D. R. and otherwise.	Longitude obtained by D. R. and otherwise.	Remarks.
		1867.				° ′	° ′	° ′	° ′	
116		May 24	North Pole River	Igloo	1					Starts on musk-ox hunt.
117		May 25	Miles Lake	Tupik	1					The data were not sufficient to obtain the positions of these encampments.
118		May 26		do	3					
119		May 29	Miles Lake	do	2					
120	65th Enc't	May 31	Ships' Harbor Islands	Igloo and tupik.	74					See No. 71 for position.
121		Aug. 13	Pitiktouyer	Tupik	7					See No. 61 for position.
122		Aug. 20	Ships' Harbor Islands	do	12					See No. 71 for position.
123		Sept. 1	Iwillik	do	4					See No. 52 for position.
124		Sept. 5	Ships' Harbor Islands	do	3					See No. 71 for position.
125		Sept. 8	Near Pitiktouyer	do	1					See No. 61 for position.
126		Sept. 9	Iwillik	Igloo	8	66 30.6 N.				See No. 52 for position.
127		Sept. 17	Near Beacon Hill	do	7					See No. 27 for position.
128		Sept. 24	Iwillik	do	1					See No. 52 for position.
129		Sept. 25	Talloon	do	180					See No. 70 for position.
		1868.								
130	1st Igloo	Mar. 23		Igloo	1					Starts for Fury and Hecla Straits. Notes lost in a gale of wind, so that the positions of these encampments cannot be ascertained.
131	2d Igloo	Mar. 24		do	1					
132	3d Igloo	Mar. 25		do	1					Same Encamp't as No. 73.
133	4th Igloo	Mar. 26	Lyon's Inlet	do	1					
134	5th Igloo	Mar. 27		do	1					Same Encamp't as No. 73
135	6th Igloo	Mar. 28		do	2					
136	7th Igloo	Mar. 30	Lake Nappoo	do	1					
137	8th Igloo	Mar. 31	On land	do	1					
138	9th Igloo	Apr. 1	do	do	1					
139	10th Igloo	Apr. 2	Oosooarku	do	2	67 50 N.			82 00 W.	
140	11th Igloo	Apr. 4	Near Amitoke	do	1					
141	12th Igloo	Apr. 5	On sea-ice	do	1					
142	13th Igloo	Apr. 6	Near Ooglit Islands	do	1					
143	14th Igloo	Apr. 7	Ooglit Islands	do	9	68 58.9 N.			80 40 W.	
144	1st Igloo	Apr. 16	Hooper Inlet	do	1			69 13 N.	81 30 W.	
145	2d Igloo	Apr. 17	Quilliam Creek	do	1			69 29 N.	82 43 W.	
146	3d Igloo	Apr. 18	Crozier River	do	1			69 30 N.	83 12 W.	
147	4th Igloo	Apr. 19	Grinnell Lake	do	1			69 40 N.	84 8 W.	
148	5th Igloo	Apr. 20	Brevoort River	do	1			69 42 N.	85 00 W.	
149	6th Igloo	Apr. 21	Encampment Bay	do	2	69 47.5 N.			85 15 W.	
150	7th Igloo	Apr. 23	Committee Bay	do	2			69 35 N.	85 16 W.	
151	8th Igloo	Apr. 25	Monumental Bay	do	1			69 27 N.	85 00 W.	
152	9th Igloo	Apr. 26	Encampment Bay	do	1					Same Encamp't as No. 149.
153	10th Igloo	Apr. 27	Near Cape Englefield	do	4	69 51 N.			85 12 W.	

ENCAMPMENTS—Continued.

Total number.	Hall's number.	Date of making.	Name of locality.	Nature of the habitation.	Number of days Hall remained.	Hall's observed latitude.	Hall's observed longitude.	Latitude obtained by D. R. and otherwise.	Longitude obtained by D. R. and otherwise.	Remarks.
		1868.				° ′	° ′	° ′	° ′	
154	11th Igloo	May 1	Near East Cape	Igloo	2	69 49.7 N.			84 34 W.	
155	12th Igloo	May 3	Amherst Island	do	2			69 48 N.	83 41 W.	
156	13th Igloo	May 5	Griffith's Creek	do	1			69 39 N.	83 14 W.	
157	14th Igloo	May 6	Hooper Inlet	do	2			69 24 N.	82 11 W.	
158		May 8	Ooglit Islands	do	4					See No. 143 for position.
159	1st Igloo	May 12	Near Ig-loo-lik	do	2			69 18 N.	81 6 W.	
160	2d Igloo	May 14	Tern Island	do	1			69 32 N.	80 31 W.	
161	3d Igloo	May 15	Near Ig-loo-lik	do	3			69 23 N.	81 2 W.	
162	4th Igloo	May 18	Near Gifford River	do	1			69 47 N.	81 5 W.	
163	5th Igloo	May 19	Gifford River	do	2	70 00.8 N.			81 37 W.	
164	6th Igloo	May 21	Near Ig-loo-lik	do	5					Same Encamp't as No. 161.
165	7th Igloo	May 26	do	do	4					Same Encamp't as No. 159.
166	8th Igloo	May 30	Pingitkalik	do	<1			69 2.5 N.	80 49 W.	
167		May 30	Ooglit Islands	do	3					See No. 143 for position.
168	1st Enc't	June 2	W. of Ooglit Islands	do	2	68 55.6 N.			81 12 W.	
169	2d Enc't	June 4	On a new lake	Kongmong	3	68 48.6 N.			81 40 W.	
170	3d Enc't	June 7	Ingnuktoo	Tupik	1			68 21 N.	81 43 W.	
171	4th Enc't	June 8	Oosooarku	do	4					See No. 139 for position.
172	5th Enc't	June 12	On land	do	2	67 37.4 N.			82 38 W.	
173	6th Enc't	June 14	Near Pingnarku Mountain	do	3			67 22 N.	83 31 W.	
174	7th Enc't	June 17	Nappoo Lake	do	1			67 5.5 N.	83 57 W.	
175	8th Enc't	June 18	Talloon Lake	do	3	66 54 N.			84 12 W.	
176	9th Enc't	June 21	Lyon's Inlet	do	2	66 34.9 N.			84 30 W.	
177	10th Enc't	June 23	On land	do	1			66 32 N.	84 52 W.	
178	11th Enc't	June 24	Haviland Bay	do	2	66 29.5 N.			85 28 W.	
179	Talloon Enc't	June 26	Talloon	do	20					See No. 70 for position.
180		July 16	Tinneejeevee	do	36			66 30.9 N.	86 53 W.	
181	Low-Tide Enc't	Aug. 21	Talloon Bay	do	1					See No. 252 for latitude.
182		Aug. 22	Ships' Harbor Islands	do	1					See No. 71 for position.
183	Low-Tide Enc't	Aug. 23	Talloon Bay	do	9					See No. 252 for latitude.
184		Sept. 1	Iwillik	do	11					See No. 52 for position.
185		Sept. 12	Near Talloon	do	3					See No. 70 for position.
186	Talloon Enc't	Sept. 15	Talloon	Igloo	43					See No. 70 for position.
187	Lake Enc't	Oct. 28	Near Talloon Bay	do	14			66 33.5 N.	86 34 W.	
188	1st Enc't	Nov. 11	N. of Ships' Harbor Islands	do	1	66 30.7 N.			86 7 5? W.	Starts for Lyon's Inlet.
189	2d Enc't	Nov. 12	Haviland Bay	do	1	66 35 N.			85 36 W.	
190	3d Enc't	Nov. 13	On lake	do	1			66 47 N.	85 25 W.	
191	4th Enc't	Nov. 14	Ross Bay	do	1	66 57.9 N.			85 19 W.	
192		Nov. 15	On land	do	2			66 58.5 N.	85 23 W.	
193	5th Enc't	Nov. 17	Ig-loo-lik of Lyon's Inlet	do	2	66 59 N.			85 00 W.	
194	6th Enc't	Nov. 19	Neebarbic Creek	do	1	67 1 N.			84 52 W.	
195	7th Enc't	Nov. 20	Hoppner Inlet	do	1	66 56.5 N.			84 15 W.	
196	8th Enc't	Nov. 21	Neebarbic Creek	do	5	67 00 N.				Same Encamp't as No. 194.

ENCAMPMENTS—Continued.

Total number.	Hall's number.	Date of making.	Name of locality.	Nature of the habitation.	Number of days Hall remained.	Hall's observed latitude.	Hall's observed longitude.	Latitude obtained by D. R. and otherwise.	Longitude obtained by D. R. and otherwise.	Remarks.
		1868.				° ′	° ′	° ′	° ′	
197	9th Enc't	Nov. 26	Ross Bay	Igloo	1	66 57.8 N.				Same Encamp't as No. 191.
198	10th Enc't	Nov. 27	.....	do	1	.....	.....	.....	.....	Near No. 190.
199	11th Enc't	Nov. 28	Haviland Bay	do	1	.....	.....	.....	.....	Near No. 189.
200	Lake Enc't	Nov. 29	Near Talloon Bay	do	47	.....	.....	.....	.....	See No. 187 for position.
		1869.								
201	Talloon Enc't	Jan. 15	Talloon	Igloo	67	.....	.....	.....	.....	See No. 70 for position.
202	1st Enc't	Mar. 23	North Pole Lake	do	1	.....	.....	.....	.....	Starts for King William's Land.
203	2d Enc't	Mar. 24	do	do	1	.....	.....	.....	.....	
204	3d Enc't	Mar. 25	Christie Lake	do	1	.....	.....	.....	.....	
205	4th Enc't	Mar. 26	Six-Mile Lake	do	1	.....	.....	.....	.....	
206	5th Enc't	Mar. 27	Miles Lake	do	2	.....	.....	.....	.....	
207	6th Enc't	Mar. 29	On land	do	1	.....	.....	.....	.....	
208	7th Enc't	Mar. 30	Near Cape Lady Pelly	do	1	.....	.....	.....	.....	
209	8th Enc't	Mar. 31	On sea-ice	do	1	.....	.....	.....	.....	
210	9th Enc't	Apr. 1	do	do	1	.....	.....	.....	.....	
211	10th Enc't	Apr. 2	do	do	2	.....	.....	.....	.....	
212	11th Enc't	Apr. 4	do	do	1	.....	.....	.....	.....	
213	12th Enc't	Apr. 5	On land	do	1	.....	.....	68 7 N.	88 48 W.	
214	13th Enc't	Apr. 6	do	do	1	.....	.....	68 15 N.	89 17 W.	
215	14th Enc't	Apr. 7	On a lake	do	1	.....	.....	68 22.5 N.	89 42 W.	
216	15th Enc't	Apr. 8	On land	do	1	.....	.....	68 26 N.	89 53 W.	
217	16th Enc't	Apr. 9	Pelly Bay	do	2	.....	.....	68 28 N.	90 7 W.	
218	17th Enc't	Apr. 11	do	do	2	.....	.....	68 30.5 N.	90 28.5 W.	
219	18th Enc't	Apr. 13	Near Pelly Bay	do	1	.....	.....	68 29 N.	90 44 W.	
220	19th Enc't	Apr. 14	Becher River	do	3	.....	.....	68 26 N.	91 7.5 W.	
221	20th Enc't	Apr. 17	Near Simpson Lake	do	5	68 31.1 N.	.....	.....	91 30 W.	
222	21st Enc't	Apr. 22	Grinnell Lake	do	2	.....	.....	68 36 N.	92 3 W.	
223	22d Enc't	Apr. 24	On land	do	1	.....	.....	68 24 N.	92 22 W.	
224	23d Enc't	Apr. 25	do	do	2	68 29.8 N.	.....	.....	92 45 W.	
225	24th Enc't	Apr. 27	Near Inglis Bay	do	1	.....	.....	68 36 N.	93 29 W.	
226	25th Enc't	Apr. 28	Shepherd Bay	do	2	.....	.....	68 38 N.	93 52 W.	
227	26th Enc't	Apr. 30	do	do	1	.....	.....	68 40 N.	94 6.5 W.	
228	27th Enc't	May 1	Near Shepherd Bay	do	7	.....	.....	68 38 N.	94 6.5 W.	
229	28th Enc't	May 8	Near King William's Land	do	2	.....	.....	.....	95 36 W.	See No. 232 for latitude.
230	29th Enc't	May 10	do	do	1	.....	.....	68 26 N.	96 21 W.	
231	30th Enc't	May 11	Todd Island	do	4	68 23.8 N.	.....	.....	96 33 W.	
232	31st Enc't	May 15	Near King William's Land	do	1	68 32.2 N.	.....	.....	.....	Same Encamp't as No. 229.
233	32d Enc't	May 16	Near Shepherd Bay	do	4	.....	.....	.....	.....	Same Encamp't as No. 228.
234	33d Enc't	May 20	do	do	2	.....	.....	68 36 N.	93 52 W.	
235	34th Enc't	May 22	On land	do	1	.....	.....	68 30 N.	93 6 W.	
236	35th Enc't	May 23	do	do	2	68 33.1 N.	.....	.....	92 29 W.	
237	36th Enc't	May 25	Near Simpson Lake	do	3	.....	.....	.....	.....	Same Encamp't as No. 221.

ENCAMPMENTS—Continued.

Total number	Hall's number.	Date of making.	Name of locality.	Nature of the habitation.	Number of days Hall remained.	Hall's observed latitude.	Hall's observed longitude.	Latitude obtained by D. R. and otherwise.	Longitude obtained by D. R. and otherwise.	Remarks.
		1869.				° ′	° ′	° ′	° ′	
238	37th Enc't	May 28	Beecher River	Igloo	1			68 26 N.	91 8 W.	
239	38th Enc't	May 29	Pelly Bay	do	2			68 25 N.	90 21 W.	
240	39th Enc't	May 31	On land	do	1			68 15 N.	90 3 W.	
241	40th Enc't	June 1	do	do	3			68 7 N.	89 27 W.	Same Encamp't as No. 211.
242	41st Enc't	June 4	do	do	1	68 2.1 N.			88 45 W.	
243	42d Enc't	June 5	Cape Weynton	Kongmong	1					
244	43d Enc't	June 6	On sea-ice	do	2					
245	44th Enc't	June 8	do	Tupik	1					
246	45th Enc't	June 10	Near Cape Lady Pelly	do	2					
247	46th Enc't	June 11	On land	do	2					
248	47th Enc't	June 13	Near Miles Lake	do	3					
249	48th Enc't	June 16	On land	do	1					
250	49th Enc't	June 17	do	do	1					
251	50th Enc't	June 18	Near Beacon Hill	do	1					
252	51st Enc't	June 19	Talloon Bay	do	52	66 29.4 N.				Same Encamp't as Low Tide.
253		Aug. 10	See-too-ok-big	do	7					North of Potter Island.
254		Aug. 17	Near Whale Point	do	9	64 21.7 N.				
255		Aug. 26								On the Ansel Gibbs, bound for the United States.

APPENDIX III.

ON THE GEOLOGY OF FROBISHER BAY AND FIELD BAY; A DESCRIPTION OF THE GEOLOGICAL COLLECTIONS MADE BY C. F. HALL ON HIS FIRST VOYAGE, 1860–'62.

These collections were presented to Amherst College, Mass., by J. J. COPP, Esq., of Groton, Conn., a graduate of the college. They are discussed in the following pages by Prof. B. K. EMERSON, Professor of Geology in that Institution. They are appended to the Narrative as exhibiting additional proofs to those given in Chapters I and II of Hall's labors, which seeured the outfit for his Second Expedition.

APPENDIX III.

ON THE GEOLOGY OF FROBISHER BAY AND FIELD BAY.

DESCRIPTION OF THE COLLECTIONS MADE BY C. F. HALL DURING HIS FIRST EXPEDITION IN THE ARCTIC REGIONS, 1860–'62.

BY PROF. BENJ. K. EMERSON, *of Amherst College, Massachusetts.*

On the return of Mr. C. F. Hall to New London, Conn., from his First Expedition to the Arctic Regions, he turned over a part of his collections, apparently the portion which he considered of the greatest geological interest, to the New York Lyceum of Natural History; and it was the subject of brief reports to the Lyceum by Mr. R. P. Stevens upon the fossils and by Mr. Thomas Egleston upon the rocks and ores. Mr. Stevens gave a list, without description, of seven species of fossils, viz:

	No. of specimens.
Maclurea magna (Les.)	7
" " casts of lower surface	3
Endoceras proteiforme? (Hall)	1
Orthoceras (badly worn)	3
Heliolites (new species)	2
Heliopora (new species)	1
Halysites catenulata (Fisch.)	1
Receptaculites (new species)	1

Mr. Stevens accompanied this list with notes of the stratigraphical position of the species in New York, and with the remark, "This collection was made at the head of Frobisher Bay, lat. 63° 44′ N. and long. 68° 56′ W. from Greenwich,

at a point which Mr. Hall says is a mountain of fossils similar to the limestone bluff at Cincinnati, with which he is familiar."*

These specimens came manifestly from the ridge at the head of the bay, to which Hall gave the name Silliman's Fossil Mount, and which in his Narrative he compares to the Cincinnati bluff. Another portion of the collections was stored at New London, and, after the departure of Hall upon his second visit to the Arctic Regions, was presented to the cabinet of Amherst College by Mr. J. J. Copp, of Groton, Conn., a graduate of the college. It was contained in three large boxes, weighing about two hundred pounds; they had not been opened since they were packed by Hall in Rescue Harbor, Field Bay. The collection presented, on its opening, a very unpromising appearance. Having been packed with greasy and sooty papers in the *igloos* of the natives or upon the deck of the whaler, and having remained untouched for so long a time, it was covered with mold, and many of the labels were illegible. Fortunately, the most interesting specimens had the locality marked in ink or pencil upon the surface of the rock itself, and in other cases, a study of Hall's Narrative enabled one to restore with a good degree of certainty the exact localities from which they came. The localities, however, quoted in the following paper are, in all cases, those given by Hall himself.†

* Report on the geological and mineralogical specimens collected by Mr. C. F. Hall in Frobisher Bay.—Am. Jour. Sc., 2d series, vol. 35, 1863, pp. 293, 294; also "Hall's Arctic Researches," App. X, p. 594.

†The boxes contained specimens from other Arctic Regions besides Baffin's Land, viz: (1) Several from Holsteinborg, Greenland, picked up by Hall when his ship visited that port, and (2) several from Melville and Beechy Islands, manifestly collected by McClintock's Expedition in 1853*, and a number from both shores of Smith's Sound. I think it probable that they were presented to Captain Hall in Holsteinborg and packed by him with his other things in Rescue Harbor. It is certain that the boxes were not opened after their arrival in this country until they came into my possession.

The specimens were as follows:

HOLSTEINBORG.

1.† Gray translucent quartz.

2. White granular orthoclase.

3. Gabbro, a rock of medium grain, consisting of a green compact feldspar resembling saussurite, pearl-gray to greenish-gray diallage, brown biotite in abundance, quartz sparingly, and carbonates, as indicated by long-continued effervescence with acids.

The brown mica is arranged in one plane, giving the rock a complete gneissoid structure, making the rock in fact a middle form between gneiss and gabbro. Two narrow quartz veins traverse the rock, one in the plane of lamination and the other at right angles thereto.

4. Pale flesh-colored black mica gneiss.

5. Dark gray thin-bedded black mica gneiss.

6. Gray-black mica gneiss.

7. Reddish hornblendic gneiss.

* Journal of the Royal Dublin Soc. 1857, p. 215.

† The numbers refer to numbers attached to the specimens in the collection of Amherst College.

The common crystalline rocks of the Arctic regions, granitic and gneissose, made up the bulk of the collection. With these were traps, red massive quartzites, sandstones, gray and cream-colored dolomites and limestones, and a few pieces of black cherty and dark fissile limestones, which furnished so many fossils new in these regions, and coming from a horizon which had not before been known to be represented so far north—that of the Utica slate—that it seemed desirable to publish their occurrence; and as the west side of Baffin's Bay is so little open to exploration, I have given a somewhat detailed account of all the specimens which came into my hands. I was the more desirous to do this in order to add something to the already very considerable scientific results of this unique Expedition, as the single member thereof was accustomed to call it. By the careful exploration of Frobisher Bay Hall filled out a considerable gap in the geographical knowledge of the northern regions. His full investigations of the relics of Frobisher cleared up many points in the history of his brave predecessor, and recalled very vividly the famous gold excitement of the times

FROM BARROW STRAITS.

8. Brown coal. Thin laminated, with joints at right angles to the laminæ: color dull black, powder deep reddish-brown; burns with yellow flame, and the flame continues after it is removed from the gas-jet; leaves a white ash, retaining the shape and nearly the size of the piece employed. Nothing extracted by ether.

Labeled, "Specimen of coal from the center of Melville Island. Picked up 1853.—BEDFORD PIM."

This is manifestly a specimen rescued from the collections abandoned by Captain McClintock's party in the memorable sledge journey across Melville Island.*

9. A piece of fossiliferous Upper Silurian limestone, containing the following forms in such poor preservation that the determination is in some cases rather uncertain: *Atrypa phoca*, Salter, sp. (young state); *Loxonema* Rossi, Houghton; *Favosites gothlandica*, Gold.; *Petræa bina* (?), Lons.; *Cladopora seriata*, Hall; *Halysites catenulata*, L.

Labeled, "Geological Specimens of the Parry Islands. Picked up on Beechy Island, east of the group, 1856.—BEDFORD PIM."

FROM SMITH'S SOUND.

10. A light gray granulite, quartz, orthoclase, and garnet, passing abruptly into a black mica gneiss.

Locality, Etah Bay, North Greenland.

11. Protogine. Deep flesh-red orthoclase, a bright grass-green chloritic mineral (H = 1.5) and biotite altered to rubellan, the latter in small quantity. It seems probable that the chloritic mineral, which has exactly the properties of viridite, is a product of the decomposition of biotite, the rubellan representing an intermediate stage. The rock was then originally a red biotite-granite. one of the commonest rocks in the Arctic region.

Locality, Etah Bay.

12. Hornblende Schist. For the most part greenish-black hornblende, with a little bronze-colored mica and quartz.

Locality, Etah Bay.

* Reminiscences of Arctic Ice-Travel, Journal Roy. Dublin Soc. 1857, pp. 235, 236.

of Elizabeth. The coals and fluxes brought from England, the anvils and trenches, the blooms made in testing for gold, the prospecting-holes, and the masses of the "black stone like unto coal," which the London jewelers had declared to be gold-bearing, and the full traditions of the natives, all seem like a chapter out of our own Western history. "His long and intimate association with the Innuit makes his book a mine of information in Ethnology, and the geological collections made by him give us the only information concerning the occurrence of the Lower Silurian in the whole of Arctic America north of Rupert's Land, with the single exception of the fossils collected by Captain McClintock and described by Houghton.*" These were:

1. *Maclurea arctica*, Houghton, near *M. magna*, in white Silurian dolomite from Depot Bay, in Bellot's Straits, 72° N., 94° W.
2. The same with *Chætetes lycoperdon*, H., associated with Upper Silurian fossils at Fury Point, 72° 50′ N., 92° W.
3. *M. arctica*, Hough., *Ormoceras crebriseptum*, H., *Huronia vertebralis*, Stokes, *Orthoceras Canadense*, B., *Receptaculetes neptuni*, Def., from the west coast of King William's Land.
4. *Orthoceras moniliforme*, H., Cape Riley, North Devon.

These localities lie many hundred miles to the northwest of Frobisher Bay, and are characterized over wide areas by buff and cream-colored dolomites and limestones, are succeeded by the limestones of the Upper Silurian and Carbon-

13. A reddish-gray quartzite in contorted layers, the ends of the laminæ coated with a curious coraloidal deposit of brick-red limonite. Locality, Etah Bay.

14. Beautiful milky quartz, limpid, with pale purple opalescence. Locality, Etah Bay.

15. Coarse garnetiferous gneiss. From Sontag's grave, at Port Foulke, North Greenland.

16. Many fragments of same opalescent quartz as above (5). From Sontag's grave.

17. Coarse granite; gray translucent quartz; flesh-colored feldspar in large crystalline masses, and no mica. Locality, Esquimaux Point, North Greenland.

18. Flesh-colored garnetiferous gneiss, black mica. Esquimaux Point.

19. A very even-bedded friable quartz sandstone, splitting in laminæ 17^{mm} thick, and quite free from any impurity. The specimen is pure enough for the manufacture of glass, resembling closely the St. Peter's sandstone at St. Paul.

It is labeled, "From Cape Alexander, L. 78° 20′ N., L. 73° W."

These sandstones are mentioned by Sutherland as stretching from Wolstonholme Sound to Cape Alexander, nearly always horizontal (Proc. Geo. Soc. 1853, p. 298), and are compared by McClintock with the sandstone from Byam Martin's Island from the base of the Carboniferous. (Journal Roy. Dublin Soc. 1857, p. 199.)

20. Coarse granitoid gneiss with large red garnets (12–14^{mm}). Locality, Cape Isabella, Grinnell Land.

21. Laminated garnetiferous gneiss banded with black mica. Cape Isabella,

22. Gray granular quartzite, the grains separated by films of kaolin. Cape Isabella.

* Journal of the Royal Dublin Society, July, 1860, Vol. III, p. 53.

iferous, and farther north and west by Jurassic strata, while the outcrops in and around Frobisher Bay are in the immediate vicinity of and apparently skirting the crystalline rocks, are dark colored, largely argillaceous inshore deposits, containing a very different assemblage of fossils (though of about the same age) from the more western localities, viz: *Calymene senaria*, Con.; *Triarthrus Beckii*, Green; *Endoceras proteiforme*, H., flattened as in the Utica slate *Diplograptus dentatus*, Br.; *Climacographis quadrimucronatus*, H.; *C. bicornis*, H.; *Lingula curta*, H.

The localities around Frobisher Bay bear, therefore, somewhat the same relation to those of Prince William's Land and North Devon which the typical localities of the Utica slate and the Hudson River group in New York bear to the more western areas of the Mississippi Basin. In Frobisher Bay we have a group of fossils unmixed with those of earlier or later date, which mark the exact horizon of the Utica slate, and the rocks have a lithological facies recalling that of the typical localities of this epoch in New York. In the northwestern area the whole Paleozoic series seems to be represented by a nearly unbroken succession of limestones, and the subdivisions merge into each other as in the central basin of the United States. So that Houghton says "the whole of North Somerset, Boothia Felix, King William's Land, and Prince of Wales Land is thus proved to be of Silurian age, although the evidence as to whether it is Upper or Lower Silurian is contradictory, as characteristic fossils of both epochs are found throughout the whole area."* We must, however, associate the locality at the extreme upper or western end of the bay already alluded to as Silliman's Fossil Mount with the calcarious facies of the Arctic Silurian as described by Houghton, since in the small list of seven species published by Stevens and quoted above, five are probably identical with those described by Houghton, and the two others are corals, described as new species; so that this locality extends the great Arctic limestone area greatly to the southeast, and makes it comparable in size with the central basin of the United States.

CRYSTALLINE ROCKS.

23. Granite.

A large and a small mass of very coarse red granite, containing deep flesh-red orthoclase in large crystalline masses, a much smaller amount of gray quartz and lepidomelane in black and greenish-black scaly corrugated plates.

Locality, French Head, Field Bay.

* Loc. cit., p. 53.

24. Granite.

In several packages, without special labels, and coming probably from Field and Grinnell Bays, there were above a dozen specimens of the same coarse orthoclase-lepidomelane granite as 23, showing it to be very prevalent. In fact, many of the descriptions of rocks given by Hall will apply only to granite, and, taken in connection with the specimens collected, its wide distribution is placed beyond doubt.

Thus in his first excursion in Frank Clark Harbor, on the south side of Cornelius Grinnell Bay, after mentioning prominent veins of white quartz, Hall says: "The rocks about here were indeed very remarkable. One pile consisted entirely of mica, quartz, and feldspar, and the nearest approach I can give to its appearance is to let the imagination conceive that the feldspar was in a state like putty, and worked up into various uncouth figures, the spaces between each being filled up with mica and quartz. Then would there be an appearance to what I observed on these rocks, only that ages and ages should be added to cut out deeply the mica and quartz [stands thus in the original], leaving the pure quartz veins unaffected." p. 112.

At Point Tik-koon, in Countess of Warwick's Sound, he mentions "granite, the usual high old rocks."

25. Granite.

In a large package labeled simply "Azoic Rocks, Frobisher Bay," and containing many fragments of Silurian limestones and schistose rocks, there were also many fragments of quartz and feldspar, which manifestly came from a very coarse granite of a much lighter color than that last mentioned.

26. Granite.

Coarse red feldspar granite exactly like 25.

Locality, Kuen-gum-mi-ooke.

27. Granite.

A typical fine-grained granite of deep red color. Gray, granular quartz slightly more abundant than the deep flesh-red orthoclase. The latter in rounded crystalline grains. Dark green mica in minute scales and pyrite in small quantity.

Locality, Frobisher Bay.

28. Pegmatite.

Two specimens showing deep flesh-red orthoclase scattered in irregular crystalline masses through gray quartz, the quartz greatly predominating.

Frobisher Bay.

29. GRANITE.

A pale reddish rock very fresh in the interior but much weathered on the exterior, containing a fresh translucent plagioclase in large quantity, limpid slightly amethystine quartz, and sparingly black shining biotite.

Locality, Frobisher Bay.

30. GRANITE.

A coarse-grained granite, containing flesh-red orthoclase and gray plagioclase in large masses, dark smoky quartz and black mica in small quantity.

From a package labeled "From various places up Bay of Frobisher and near head of it."

31. GRANITE.

A peculiar very coarse-grained leek-green rock, consisting principally of grayish to deep leek-green plagioclase, in large cleavable individuals, showing very fine triclinic striation, gray translucent quartz, very little flesh-colored orthoclase, and large contorted plates of black shiny lepidomelane.

Frobisher Bay.

32. GRANITE.

A deep-red rock, fine-grained, with abundant fresh plagioclase, orthoclase, black biotite, and large red garnets.

Frobisher Bay.

33. PYRITIFEROUS GRANITE.

A coarse-grained very quartzose granite, with much pyrite in large, quite distinct, crystals. Biotite and feldspar occur very sparingly. The quartz is smoky to slightly amethystine. By the decomposition of the pyrite the rock has upon the surface and in the fissures a very rusty and glazed appearance; the feldspar is changed entirely to whitish kaolin and the biotite to rubellan.

Locality, French Head, Field Bay.

34. GRANITE.

A black mica granite passing into quartzite.

35. GRANITE.

A beautiful fine-grained granite of dark color, containing abundantly red brown biotite unusually fresh and shining, gray quartz, from which the feldspar is with difficulty distinguished.

36. GRANITE.

A very granular even-grained rock, containing orthoclase, quartz, and biotite in about equal quantity.

Labeled, "Azoic Rocks, Frobisher Bay."

37. Gneiss.

A gray granitoid biotite gneiss.

North side of Frobisher Bay.

38. Gneiss.

A large water-worn bowlder of flesh-colored biotite-gneiss of even medium grain, and quite undecomposed.

39. Gneiss.

A large fresh piece of typical gneiss, flesh-colored orthoclase, and more sparingly gray plagioclase, fresh black biotite, and limpid quartz. A single crystal of wine-yellow titanite.

Frobisher Bay.

40. Gneiss.

A much decomposed biotite-gneiss.

French Head, Field Bay.

41. Magnetite gneiss.

A large unweathered specimen of typical granitoid gneiss, agreeing exactly with the second quality of the rock quarried at Westerly, R. I.; flesh-colored orthoclase, sparingly gray plagioclase, fresh black biotite, very sparingly muscovite and magnetite, and extremely minute crystals of pyrite.

Frobisher Bay.

42. Magnetite gneiss.

Same as 41, except that the foliation is expressed more by the arrangement of the flesh-colored orthoclase in bands and less by the position of the biotite.

Frobisher Bay.

43. Magnetite gneiss.

A rock of medium grain, consisting of rounded portions of orthoclase, quartz, and magnetite of about equal size and quantity, without trace of mica or any accessory. The rock is granitoid in texture, yet distinctly foliated, owing to the position of the different feldspar crystals; tinged with rust.

Locality, French Head, Field Bay.

44. Magnetite gneiss.

A large freshly-broken specimen of gray gneiss. In a reddish-white mixture of quartz and feldspar are scattered biotite and magnetite in imperfect dodecahedrons, with striated faces 5–2 mm. diameter. The magnetite is much more abundant than the biotite, and both are arranged parallel to the foliation planes. A vein of segregation runs through the specimens, consisting of flesh-colored

orthoclase, gray plagioclase and quartz much more coarsely crystallized than in the mass of the rock.

45. MAGNETITE GNEISS.

A fine-grained granitoid gneiss, having at first sight somewhat the appearance of andesite. The pearl-gray ground mass is a fine-grained mixture of quartz and a feldspar, mostly triclinic, and scattered in this abundantly are grains of magnetite, and sparingly brown decomposed biotite.

French Head, Field Bay.

46. MAGNETITE GNEISS.

A decomposed granitoid gneiss, closely resembling 43. This occurs in several large pieces.

47. MAGNETITE GNEISS.

Contains orthoclase, albite, and quartz in about equal quantities, less abundantly magnetite, and as a product of alteration chlorite. The rock is fine-grained, fresh, pale flesh-colored, mottled with spots of dark green color, consisting of magnetite and chlorite, which lie in the plane of stratification. The chlorite fills also as thin seams a system of cleavage cracks passing at large angle to the cleavage.

Examined in thin section, the feldspars are for the most part water clear, showing only incipient clouding of kaolin on fissures, and extremely delicate and minute dentritic infiltrations of ochre. The albite is predominant, and here and there grown together with orthoclase. The quartz contains in immense numbers small round and large irregular and contorted fluid inclosures, with very large bubbles, moving only when heated. The magnetite grains—$\frac{1}{2}$ to 1 mm. in diameter—are surrounded by a ring of bright green plates of chlorite, and from these as centers the chlorite passes outward in the fissures, producing the patches of green color.

Locality, Frobisher Bay.

48. MAGNETITE GNEISS.

A fine-grained granitoid mixture of quartz, orthoclase, and sparingly a triclinic feldspar, to which granular magnetite, arranged in parallel blotches, gives a rudely gneissoid structure. This and the foregoing agree exactly with the Laurentian gneisses from Grenville, Canada.

Labeled, "From various places up Bay of Frobisher and near head of it."

49. GRAPHITIC GNEISS.

Two large and many small specimens of a decomposed and rusty granitoid gneiss of a grey color when fresh. It contains a dark-brown mica, minute crystals

of magnetite, and much disseminated graphite in scales up to 1 mm. in size. The rock is uniformly much decomposed, and coated in many places with a secondary deposit of siderite and limonite.

Various places in Frobisher Bay.

50. EPIDOTIC GNEISS.

Small fragments of a red granitoid gneiss with reticulated veins of epidote, and of a red gneiss passing into petrosilex and colored apparently by epidote.

51. SCHISTOSE GNEISS.

A broad freshly-broken plate of very thin-bedded biotite gneiss, the feldspar not abundant and wholly triclinic.

Frobisher Bay.

52. GRANULITE.

A granitoid gneiss, wherein red garnets (1–3 mm.) replace the mica entirely.

Labeled, "Azoic Rocks, Frobisher Bay."

53. BANDED MICA SCHIST.

A large piece of schist, containing biotite and quartz, arranged in black horizontal bands, 1–12 mm. wide, of fresh black biotite and granular quartz, the intervening bands containing little or no mica, and consisting of quartz of two kinds: (*a*) a reddish somewhat friable granular quartz, through which run (*b*) flat plates of a gray translucent infiltrated quartz, placed parallel to the bedding, and manifestly of later formation.

54. NORMAL MICA SCHIST.

A typical mica schist of medium grain splitting into flat thin plates, containing only quartz and biotite much weathered.

Labeled, "From trench dug by Martin Frobisher, 1578. *Ni-oun-te-lik*." This is an island on the north side of Frobisher Bay.

55. MICA SCHIST.

A black wavy mica schist, consisting of black to bronze colored biotite, with little quartz.

Labeled, "French Head, Field Bay."

56. MICA SCHIST.

A rock agreeing closely with 55, but containing more quartz and a little feldspar.

Labeled, "From various places up Bay of Frobisher and near head of it."

58. PETROSILEX.

A band of black compact hornstone 18 mm. wide runs through a piece of

black mica granite like No. 35. It has splintery fracture, and shows glistening points of quartz upon fresh surfaces.

59. PETROSILEX.

A fresh leek-green felsite or petrosilex weathering white, agreeing closely with the green petrosilex from Pelham, Mass., which has passed under the name of "Shay's flint;" and this rock proves, like that from Pelham, to be a very fine-grained silicious variety of hornblendic gneiss. This conclusion is based on a study of thin sections of both varieties.

60. BANDED HORNBLENDIC GNEISS.

Greenish-black granular hornblende, granular quartz, and some feldspar, mostly triclinic. The banded structure is caused by the interposition of more compact layers of quartz and feldspar; a little biotite present in brown decomposed scales.

61. BANDED HORNBLENDIC GNEISS.

A large mass similar to 60, the dark layers finer grained, and the quartz-feldspar layers thick and irregular.

62. HORNBLENDIC GNEISS.

A thin laminated rock, containing abundantly white to greenish muscovite, dark brown hornblende, quartz, and feldspar; the latter in one instance triclinic. The very bright pearly luster of the mica gives the rock a peculiar sheen upon the cleavage face which disappears entirely in other directions.

Labeled, "Azoic Rocks, Frobisher Bay."

63. HORNBLENDIC GNEISS.

Granitoid, with white and red feldspar, black granular hornblende, and green mica.

Locality, French Head, Field Bay.

64. FOLIATED HORNBLENDIC GNEISS.

Thin folia of black to greenish-black hornblende, separate broader bands of a mixture of milk-white orthoclase and quartz, forming a rock of very attractive appearance.

65. SYENITE.

Granitoid and of medium grain. The rounded spots of white orthoclase stand out on a background of blackish-green hornblende.

Labeled, "Azoic Rocks, Frobisher Bay."

66. HORNBLENDE SCHIST.

Several pieces of schist, consisting of black granular hornblende and quartz, in one case containing a little triclinic feldspar and chalcopyrite.

Labeled, "Azoic Rocks, Frobisher Bay."

67. HORNBLENDE SCHIST.

Several pieces resembling 66, but finer grained and more schistose.

Labeled, "From various places up Bay of Frobisher and near head of it."

68. QUARTZITE.

Three large masses of a compact jaspery quartzite of deep red color and broad conchoidal fracture. They are only slightly banded by a slight concentration of the iron in broad bands, and are remarkably homogeneous, and free from any other impurities except the red oxyde of iron. They were marked (1) in ink, and seem to me to have been gathered by Hall during his first long excursion along the north shore of Frobisher Bay, but of this I cannot be certain.

69. QUARTZITE.

Several pieces of a rusty-red quartz sandstone, which seem to be only weathered pieces of the same kind as 68.

70. QUARTZITE.

A water-worn pebble of a similar deep red quartzite, slightly micaceous, from French Head, Field Bay.

The rocks described under the last three numbers might almost as well have been associated with the Devonian sandstone of Lupton Sound, described later (No. 108), or the sandstone from Cape Alexander (vide *ante* No. 19). It is, however, much more indurated, especially No. 68, and has a much older look.

MINERALS AND ORES.

71. QUARTZ.

Four large pieces of translucent vein quartz.

From French Head, Field Bay.

72. QUARTZ.

White translucent vein quartz.

Labeled, "From various places up Bay of Frobisher and near head of it."

73. QUARTZ.

A fine piece of rose quartz and another of smoky quartz.

From Frobisher Bay.

74. APATITE.

Rounded grains of green apatite in white orthoclase.

Kuen-gum-mi-ooke.

Frobisher Bay.

75. GARNET.

A cleavage piece of a large deep red crystal of albandite.

French Head, Field Bay.

76. GRAPHITE.

Several large pieces of perfectly pure soft graphite; one also still inclosed in quartz. In a bundle marked "(a) Azoic Rocks," by Hall, with fragments of Silurian limestones.

77. BIOTITE.

A large crystal 75 mm. long, 50 mm. wide, and 40 mm thick, with irregular sides. Adhering to one side is a portion of clear orthoclase, variety sunstone. On another side another portion of the same feldspar contains many small wine-yellow Zircons. The crystal is also penetrated by plates 5–10 mm. broad, of a leek-green mineral, brittle, with bronze luster and eminent cleavage. Under the microscope it shows two cleavages at right angles and a third, prismatic, between these, making an angle of 120° 45′, and contains abundant inclosures arranged paralled to the rectangular cleavages. These properties make it quite certain that the mineral is diallage.

Frobisher Bay.

IRON ORES.

78. MAGNETITE.

Several pieces of magnetite in quartz; one part of a large crystal with a piece of iron slag and two pieces of limpid quartz. The label reads, "Much like to a sea-coal in color. From Little Bay, Ek-ke-lu-zhun, on cape or point where I found coal of Frobisher Expedition of 1578, Tues., Sept. 24, '61. Hall." The quotation below, from page 432 of Hall's Narrative, explains the above: "Ek-ke-lu-zhun, Victoria Bay. Embedded in the rocks I found some heavy black substances, larger and more numerous than any I had before seen. These I concluded might be the 'stone like to sea-coal' described by Frobisher in the account of his voyages."

79. MAGNETITE.

A larger piece from the same locality—part of a large crystal in limpid quartz. Label, "Like to sea-coal in color." Ek-ker-lu-zhun. This label is written on the 550th page of Little Dorrit.

80. MAGNETITE.

Large piece of pure crystalline magnetite.

Kuen-gum-mi-ooke.

81. MAGNETITE.

Three pieces like 80.
French Head, Field Bay.

82. MAGNETITE.

Three large pieces marked (a).

83. MAGNETITE.

A large mass, weighing several pounds, part of a large imperfect crystal in quartz. The ore and quartz gangue like that from Ek-ker-lu-zhun. This and the last may be from one of the localities mentioned by Hall in the Narrative as —, page 328: "This p. m. I visited Cooper's Island, and with chisel and hammer dug out some of the black ore, such as was discovered by Frobisher's Expedition in 1578, with which many of his ships were laden. This ore attracts and repels the magnetic needle about like iron. It is very heavy." The importance of iron ore in itself and its connection with Frobisher's Expedition made Hall careful to collect it everywhere. It is manifestly very abundant both in the gneisses of the region and in separate beds.

84. LIMONITE.

Several fragments of limonite, cementing quartz and mica, and arising apparently from the decomposition of granitic rocks, and representing a deposit of no great extent.

84½. PYRITE.

A number of fragments in quartz.

Locality, Frobisher Bay.

85. PYRITE.

A large mass of very tough bluish-black quartz, full of pyrite.

86. PYRITE.

Three well-worn pieces of pyrite, used by the natives for striking fire. With these was another piece of magnetite, labeled "Obtained from the natives." Hall also mentions iron pyrites at Gold Cove, Frobisher Bay (p. 230).

COPPER ORES.

87. BORNITE.

Several pieces of pure bornite, of fine color, and a number of fragments of quartz with bornite disseminated through the mass.

French Head, Field Bay.

88. BORNITE.

A curious pseudo-conglomerate or vein-stone breccia of quartz masses, about the size of peas, cemented by a paste of bornite so abundant as to separate each grain of quartz widely from every other.

French Head, Field Bay.

89. CHALCOPYRITE.

Several pieces of a granular aggregate of quartz and black hornblende, in

which chalcopyrite occurs disseminated. The rock is tinged green with malachite from its decomposition.

French Head, Field Bay.

90. CHALCOPYRITE.

Several pieces exactly the same as 88.

Labeled, "Stones from Kuen-gum-mi-ooke."

91. CHALCOPYRITE.

Galena, siderite, pyrite. A weathered piece, containing amber-colored siderite, with the other minerals mentioned above.

French Head, Field Bay.

92. STEATITE.

A greenish-white compact talc, pale slaty-blue externally, with much hair-brown phlogopite.

Labeled, "At the coal found up Little Bay ten miles from Ni-un-ti-lik."

93. CORUNDUM.

A mass larger than a hen's egg of matted crystalline plates of a light pistachio green margarite, externally weathered to pale straw color. This incloses crystalline portions of a deep clear cobalt-blue sapphire, making about one-third the mass. The sapphire is very brittle, easily cleavable, and shows imperfect crystalline forms where it projects into cavities in the margarite. It is in places separated from the margarite by a thin layer of white calcite. The margarite melts under the blowpipe to a white botryoidal enamel.

CALCAREOUS ROCKS AND ASSOCIATED MINERALS.

94. GRANULAR LIMESTONE.

Thin pieces of a fine even-grained statuary marble, pure white and without impurities. It was manifestly interstratified with a soft green hydrous mica schist which still remains attached to one surface. With it were pieces of coarse granular limestone containing grains of pale-green coccolite.

French Head, Field Bay.

95. GRANULAR LIMESTONE WITH COCCOLITE.

A rock consisting of white calcite, pale green to bottle green and olive green; coccolite in rounded grains, with fused surfaces; bronze-colored phlogopite, and rarely grains of colophonite and spinel. The three constituents are present in about equal quantity, have about the same average size (2–6 mm.), and are so mixed as to form a massive granular rock which simulates granite perfectly.

Frobisher Bay.

96. Granular limestone.

The contents of this parcel were manifestly scraped up from the foot of a limestone cliff where it was exposed to the action of the sea, and includes, beside the limestone and its contents, fragments of adularia and of a very ferruginous quartzite. The limestone is white, coarsely granular, and very crystalline, and contains (1) coccolite, disseminated in grains .1 to 2 mm. in diameter, and rounded exteriorly as if fused. The color of these grains is a deep bottle-green. They are transparent to translucent; (2) quartz, with rounded fused faces; (3) minute red spinal rubies, octahedra, with rounded edges; (4,) phlogopite in small prisms with rounded prism faces, and of pale plum color to bronze and dull yellow on the cleavage faces.

From White Island on the south side of Frobisher Bay, near the head of it.

97. Coccolite.

Large mass of fresh dark-green to blackish-green coarse coccolite.

From parcel labeled, "From various places up Frobisher Bay and near the head of it."

98. Coccolite.

A finer-grained somewhat weathered green coccolite.

French Head, Field Bay.

The resemblance of the series of rocks here described to the Laurentian of Canada and the Adirondacks and to the Montalban of New Hampshire and Massachusetts is very marked. The typical Labradorian rocks are absent. The dark-red massive quartzites agree well with the Canadian quartzites of Huronian age.

ERUPTIVE ROCKS.

99. Quartzdiorite.

A grayish-black, compact, trap-like rock, seemingly quite fresh, but effervescing with acids. In powder blackish, with shade of green. The rock is almost aphanitic with glimmering luster; with a lens the feldspar crystals can be seen as extremely fine lines. In sections plagioclase in interlaced crystals, mostly elongated, is seen to make up the mass of the rock, in the interstices between which the other constituents appear. The feldspar is opaque—white by reflected, pale brown by transmitted, light, being filled with a pale yellowish-brown dust, which is sometimes spread over the whole surface of the section. More often, however, there is upon this as a back ground a system of darker brown lines, parallel to the greatest length of the crystal, formed by an accumulation of the same material along the lines of boundary between the separate laminæ of which the crystal is composed (parallel to $\breve{\infty}$ O $\breve{\infty}$), and to this is superadded in many

crystals a second system of lines exactly like and at right-angles to the first. This second set of lines is, however, usually only partly developed, appearing only on part of the crystal or some of the lines running only part way across the same. The lines themselves are generally more evenly spaced, more rigidly straight, and finer than the other. In rare cases they are coarser and better developed. Finally, some crystals show a beautifully perfect and delicate lattice-work, all the meshes appearing to the eye exact squares. The second set of lines runs parallel to 0 P. In agreement with this, the crystals, when examined with polarized light, prove to be polysynthetically twined parallel to ∞ P $\breve{\infty}$ and O P. Some of the crystals also show distinct cleavage planes parallel to the prism faces, and an arrangement of the same particles in these planes. Only with a Tolles lens, of the best definition and a power of 1,600, was it possible to resolve these lines into their constituents. They prove to be made up of a multitude of pale-red transparent plates, with rounded outline, which appear as black spots when in the slightest degree out of focus, disappearing almost instantly, their place being taken by others not in the same plane. A few elongated microlites, apparently hornblende and much larger, are arranged in the same plane with the smaller plates, but there is no passage from the one to the other. The small plates seem to be hematite. The blackish-brown hornblende in broad crystals incloses much well-crystallized magnetite, many hornblende microlites, also cavities with motionless bubbles, and is overgrown and often almost entirely changed into grass-green scaly viridite, which has also passed into all fissures in and between the feldspar crystals. Quartz in small rounded grains is evenly distributed through the whole, and filled with fine magnetite crystals, pale-green hornblende, and much smaller and longer apatite microlites, which sometimes pass with great regularity from all parts of the surface of the grain toward the center. In one piece long fine red needles of goethite occupy fissures.

A few crystals of olivine and masses that seem to have arisen from its decomposition occur; also minute secondary aggregations mixed with viridite occur.

Magnetite occurs in large aggregations among as well as in the other constituents.

The minerals present in the rock in the order of their frequency are oligoclase viridite, hornblende, magnetite, quartz, hematite, ? calcite, apatite.

TRAP-GRANULITE.

Trap-granulit. Lasaulx. Elemente der Petrographie, p. 348.

Diallage-granulit. Dathe. Die Diallagegranulite der Sächsischen granulit-formation. Zeit. D. g. G. xxix, p. 274, 1877.

A large block of a massive brownish-black trap-like rock, breaking with

broad conchoidal fracture, and when moistened slightly mottled with green and brown. It appears quite fresh in the interior, but effervesces with acids. On the outside is a light reddish-gray layer of decomposition 2 mm. thick. On the fresh surface it has a glistening luster, and with the lens one detects minute scales of rubellan, fine needles of hornblende, and roundish spots of reddish color, which prove to be garnets. A few small cavities have been filled with a whitish mixture of calcite and a zeolite, in which radiating needles of shining black secondary hornblende appear. The rock affords a reddish-gray powder and fuses at 3 to a whitish enamel. The powder treated with acid and examined under the microscope shows only slight changes; a small quantity of ocher and calcite is removed. Examined in thin section, the rock is found to contain the following minerals: Garnet, which makes up more than half the mass; biotite next in abundance; then hornblende and viridite, and more rarely apatite, hematite, calcite, magnetite, and a zeolite. Cyanite occurs in long flat crystals, transparent, brilliant, cut across by broad cleavage fissures filled with viridite. It polarizes with great beauty; occurs commonly in mica. The garnets are scattered through the whole mass, gathered in small groups or occurring singly, separated from each other by mica and hornblende. Many large garnets occur also in the mica. They occur mostly in rounded grains up to .45 mm. in diameter. Imperfect four, six, and eight sided cross-sections are not rare, and the smaller crystals inclosed in the larger and especially in the mica are often perfect rhombic dodecahedrons. The sections of the crystals appear moderately magnified a pale reddish-brown to Isabella-yellow, being more or less clouded with a brown dust, except at the narrow border, where they are quite pellucid and colorless or show a faint tinge of violet. The transparent portions are still isotrope, and the central portions show aggregate polarization, but when highly magnified it is seen that the transparent garnet substance predominates in most crystals. In a few cases the decomposition proceeds from the circumference, and the center is still quite transparent. The dust is made up of chlorite plates, blood-red hematite scales, and amorphous grains.

Many small perfect dodecahedra inclosed in the larger garnets are of bright lemon-yellow color, and show distinctly cleavage after ∞O. They are of the same yellow color throughout, and show no tendency to the accumulation of granular matter at the center. Many—apparently hornblende—microlites, arranged in an irregular net-work, are found in them, sometimes passing out into the surrounding mica.

Next in abundance is rubellan, in broad, fresh, transparent plates, bright hyacinth red to deep blood red, separating the groups of garnets from one

another, and inclosing large crystals of all the other constituents, especially garnet and hornblende. Often several garnets or large crystals of hornblende lie wholly or partly inclosed in a single mica crystal, or, in the case of the hornblende, run entirely across and divide the crystal into several parts.

Besides these larger inclosures, there occur in great numbers long flat microlites, irregularly arranged, and which seem to be themselves of micaceous nature, long fine apatite needles, and rarely grains of magnetite or blood-red scales of hematite. The blood-red color occurs where the cleavage lines are lacking, and the 0 P face is parallel to the section plane, while crystals cut parallel to the principal axis, and showing strongly the cleavage lines, are light brownish yellow. In the latter case the mineral is strongly dichroic. The mineral is remarkably fresh and clear in appearance, but is bordered by blackish-green fibrous viridite.

The hornblende occurs in groups of elongated crystals, often fibrous and brush-like at their ends. It is mostly grass green, sometimes grass green and smoke brown at one end and colorless at the other. It accompanies the rubellan, but is less abundant.

A blackish to grayish-green fibrous viridite surrounds many of the garnets, and is accumulated abundantly in the neighborhood of the rubellan and hornblende, from which one would not easily distinguish it if it were not for its slight absorption.

Several small portions of quartz and very rarely a grain of magnetite complete the list of the minerals observed.

102. TRAP-GRANULITE.

Not to be distinguished microscopically from the preceding rock, except in containing finely-disseminated pyrite.

Thin sections show the garnets to be more decomposed, so that there is no clear rim left; also the smaller garnets inclosed in the larger are much decomposed. In the mica, which is exactly like that in the foregoing, very many small, perfectly clear, hexagonal cross-sections of apatite occur. Single plates of diallage occur. The section contains aggregations of hornblende, grass green or smoke brown at one end and colorless at the other, projecting into calcite, which fills free spaces in the mica, and is transparent, showing the cleavage sharply. With the hornblende is associated spinel, in separate octahedra, sharply built out and in crystalline groups of a deep cobalt to plum-blue color.

103. TRAP-GRANULITE.

This is a coarser grained variety, but differs in no other respect microscopically from No. 101. The garnets, which are the principal ingredient, are distinctly

divisible into two groups, large and small, respectively, about ½ and 2 times as large as in No. 101. Decomposition has not proceeded so far, the crystals being quite translucent, of a faint ocher-yellow color, and in large part isotrope. One of the larger and many of the smaller show perfect eight-sided cross sections. Many of the larger crystals are grown together in groups of two and three, a little more than half of each being present. The larger crystals are affected in various ways by decomposition; some have the center clouded with ocher-yellow, bounded by a clear ring, and this by a ring of blood-red rubellan in minute closely aggregated crystals, which project into the clear ring. Others having the exterior ring of rubellan are in the interior clouded more or less with a green material. In others this green material is gathered at the center, having a clear yellow area between it and the outer ring of rubellan. In others a pale grass green spreads over the whole, and finally the whole crystal is changed into a bright grass-green viridite, arranged in wavy masses, which recall the fluidal structure of obsidians. Cyanite occurs in smaller crystals than in No. 101, with rectangular cross sections. It polarizes brilliantly. Magnetite is abundant. The contrast of the bright green of the viridite, the deep blood red of the rubellan upon the pale amber background of garnet, makes this a very beautiful object under the microscope.

104. TRAP-GRANULITE.

This rock is like No. 101 in appearance, and came probably from another portion of the same mass. It is, however, much more weathered and pitted superficially by the eating out of calcite, which had filled cavities in the rock. Rounded grains of quartz project from the surface. Many of the cavities are not wholly emptied, there remaining a soft pulverulent mass, which effervesces freely with acid and is wholly dissolved. Black needles of hornblende, like the calcite of secondary origin project into the latter. With the lens one sees, especially when the rock is moistened, rubellan, hornblende and light gray spots, which resemble the flesh-colored ones seen in No. 101, and which are, as in that case, garnet.

The whole rock effervesces abundantly with acid. Under the microscope the section is much clearer, the rubellan more scattered and in larger crystals, the rest more uniform and homogeneous in appearance than in No. 101. The ground color is pale ocher-yellow, clouded with darker shades of the same color. The ground shows distinct traces of tesseral forms, and remains dark under crossed Nicols. In the mica small transparent garnets occur. The rubellan occurs in large clear pieces deep blood-red and dark orange, inclosing, (besides garnets,) hornblende, and needles of apatite; and often bordered by magnetite.

The hornblende is for the most part deep green. Some crystals are reddish at one end, colorless in the middle, and green at the other. They show cross sections of 124°. Diallage in pale yellow crystals, with characteristic inclosures, plagioclase in one or two large crystals and orthoclase grown fibrous from decomposition were also present.

105. TRAP-GRANULITE.

This is a fresh fine-grained piece of the same rock, which shows a distinct separation into plates half an inch thick by a rude cleavage, which is not accompanied by any parallelism in the arrangement of the constituents. Under the microscope it shows all the minerals mentioned under the last rock described, and the resemblance is so close as to render a special description superfluous.

106. TRAP-GRANULITE.

This piece is very much weathered, of a light chocolate color, mottled with large spots of a whitish substance, filled with blackish and greenish grains. The colorless spaces prove in their section to be amygdaloidal cavities, filled with an outer layer of milk-white zeolite and an inner layer of quartz; both are filled with scales of viridite. The rest of the mass is much decomposed, but seems to have been originally the same as those above described.

107. TRAP-GRANULITE.

A small much weathered piece.

Labeled, "Found on the route between Rescue Harbor and Or-pung-ne-wing, an island in Frobisher Bay. C. F. HALL."

SEDIMENTARY ROCKS.

108. SANDSTONE.

A slab 12 by 15 inches, of a medium-grained rusty-brown flagstone, the surface covered with ripple-marks 25 mm. apart. The crests of the ripple-marks are weathered ocher yellow.

Labeled, "Sandstone, with ripple-marks. Lupton Channel. Silurian."

The following extracts from Hall's Narrative refer to this rock: "On arriving at the next place of encampment, the last before reaching the harbor, where I had left the ship, the Innuits informed me that it was called Shar-toe-wik-toe, from a natural breakwater of thin or plate stone, the native word meaning "thin, flat stone." It is on a tongue of land nearly surrounded by water, on the west side of Lupton Channel." (p. 439.)

Hall also mentions that as he stopped in Lupton Channel on his way home, an old Innuit woman brought on board as a present a fish upon a slab of red sandstone.

The rock seems to be the same with those of Cape Alexander, Wolstonholme Sound, and Byam Martin's Island, and is probably from the base of the Carboniferous.

109. LIMESTONE.

A gray crinoidal limestone, made up of comminuted fragments of corals and crinoids, all indistinguishable. Lower Silurian? near head of Frobisher Bay. The ostracoids mentioned beyond occur in a similar drab limestone.

110. LIMESTONE.

A very compact red-gray limestone, deeply corroded by sea-water. Lower Silurian. Locality, O— -in-seen-o-ping; partly illegible.

111. LIMESTONE.

A large flat piece of a compact even-bedded dark reddish-gray limestone, breaking with large conchoidal fracture, and containing, besides minute fragments of coal, part of the last whorl of a large longitudinally striated univalve. Lower Silurian.

Locality, Frobisher Bay.

112. LIMESTONE.

A deep black, massive, flinty, bituminous limestone, effervescing abundantly with acid, with perfect conchoidal fracture, weathering white externally to a distance of .5–2 mm. Utica slate. Localities, Frobisher Bay, Kun-gum-mi-ooke.

113. LIMESTONE.

A dark brown, thin-bedded flinty limestone, with spots of coaly matter from graptolites, Utica slate.

Localities, Frobisher Bay. French Head in Field Bay. Fragments of the limestones Nos. 112 and 113 were also present in abundance from many other points in Field and Frobisher Bay without special labels, and contain all the Utica slate trilobites and graptolites found in the collection.

114. DOLOMITE.

A large mass of a ragged cavernous dolomite, very harsh to the feel, dull gray in the interior, but in large part rusty.

Frobisher Bay.

115. DOLOMITE.

A large mass of compact buff dolomite, clouded with bands of smoke gray, containing crinoid stems, Halysites catenulata, Pentamerus conchidium, Dal. Upper Silurian.

Locality, Rescue Harbor.

116. DOLOMITE.

A compact buff magnesian limestone, effervescing very slowly with acid. Upper Silurian.? Kud-lu-nann.

117. DOLOMITE.

A yellowish white, very compact and tough rock, without fossils.

Frobisher Bay.

118. DOLOMITE.

A pale cream-colored magnesian limestone, compact, fine-grained, breaking with very flat, broad conchoidal fracture, extremely brittle and ringing sharply under the hammer, only slightly whitened by weathering. Several large pieces were present, all uniformly and abundantly filled with the minute tubular cavities mentioned on page 579.

Locality, "Hall's Island of Frobisher."

119. DOLOMITE.

Many fragments of gray and buff limestones, all probably magnesian.

French Head, Field Bay.

DESCRIPTION OF FOSSILS.

The fossils described below belong for the most part to two horizons. That of the Utica slate in flinty bituminous limestones, and that of the Trenton, rich in entomostraca, in gray argillaceous limestone.

BUTHOTREPHIS, *conf. gracilis*, Hall. Fig. 1. Natural size.

Stem stout, subcylindrical surface rough, succulent, ? branching. Branches alternate acuminate.

A unique specimen upon the surface of a piece of compact gray limestone like that containing entomostraca. The stems stand out from the surface of the rock, and are of lighter color and rougher than the rest of the surface of the rock. At one place alternating rounded stems, having a fruit-like aspect, are present, and many short separated branches are scattered over the surface.

PROTOZOA.

A small fragment of weathered silicious limestone, black at center, gray externally, shows many curious forms, which seem to be sponge spicules and tests of silicious protozoa. What appears to be a hexactinellid spicule is repeated several times, four hollow tapering tubes, radiating at right angles from a common center, with which the cavities of the tubes are continuous, and in which one looks down into the cavity of a fifth tube, the sixth having been removed in cutting the section. Also many fragments, pierced with close-set hexagonal open-

ings, like many of the fenestrated polycystina. Other forms imitate the flat circular diatoms, and one cross section recalls a section through a single sphere of Pulvinulina. These forms require to be magnified 30 to 50 diameters. In small pieces of gray argillaceous limestone without special label and not associated with other fossils.

RECEPTACULITES (new species).

"The receptaculites is unlike the several species of the Galena limestone of the West or the *R. occidentalis* of Canada. Mr. Salter speaks of one found in the northern part of the American continent: This may be that species or it may be a new one; which it was we have no means of determining." (R. P. Stevens, Hall's Nar. Ap. 10, p. 594.) We have made inquiry, but can find no trace of this or the other fossils reported upon in the article quoted.

DIPLOGRAPTUS DENTATUS, Brongn. sp.

1838. *Fucoides dentatus.* Brongn. Hist. Veg. Fos. pl. 6, fig. 9, 12.
1865. *Diplograptus pristiniformis.* Hall, Grap. Quebec Gr. p. 110.
1875. *Diplograptus dentatus.* Hop. & Lap. Grap. of St. Davids, Q. J. G. S., vol. 31, p. 656, pl. xxxiv, fig. 5 *a*–5 *k*.

Occurs in pieces 25–35 mm. in length, tapering slowly to a blunt point, width 2.5 to 3 mm. Hydrothecæ 22–34 to the inch, average 30. The many forms which I have referred with some doubt to the *D. dentatus* in the very wide signification given to the species by Hopkinson and Lapworth in the memoir cited above, occur penetrating the black flinty limestone in various directions, or lying upon the cleavage surfaces of the thin-bedded varieties of the same black rock. In the former case they cannot be exposed for study; in the latter, beautiful casts of the uncompressed polypary are found. Other specimens are variously compressed, and the series of figures given by Hopkinson & Lapworth would serve perfectly to represent the various forms. In two cases the proximal end is preserved as in 5 *k* (*loc. cit.*). Other forms have a more scalariform aspect than any there figured. They are all a little more slender than the normal *D. dentatus* from New York. The species occurs in company with *Triarthrus Beckii*, *Calymene senaria*, *Endoceras proteiforme*, &c.

Localities: In dark-brown silicious limestone weathering dove colored from French Head, Field Bay; and in black fissile silicious limestone at the upper end of Frobisher Bay and along the north shore of the same.

CLIMACOGRAPTUS QUADRIMUCRONATUS, Hall.

1865. *Climacograptus quadrimucronatus*, Hall. Grap. Quebec Group, p. 144, pl. xiii, figs. 1–10.

Specimens flattened in various ways represent well many of the drawings cited above, and especially a cast in the limestone of an uncompressed specimen is almost a *fac-simile* of the restoration of the species there figured (*loc. cit*), except that

only in a few cases and then indistinctly are the characteristic spines indicated. As the measurements agree exactly with those of the *C. quadrimucronatus*, I think the specimens may without doubt be referred to that species. Found associated with other Utica slate fossils at French Head, Field Bay, and in Countess of Warwick's Sound.

CLIMACOGRAPTUS, sp.

Many specimens of a form belonging certainly to this genus occur, but none are well preserved enough to allow of a determination of the species. Hydrothecæ 30–31 per inch. Greatest width 2.5 mm., tapering slowly from greatest width. They occur in the same association as the preceding species, and are closely allied to *C. bicornis*, Hall, but are much smaller.

SICULA OF GRAPTOLITES.

A large piece of chocolate-brown limestone; contains in immense numbers the embryonic tubes of a species of graptolite, probably of the *D. dentatus*, above described. These are minute very elongate hollow cones, often flattened; the mouth truncated obliquely, and prolonged in a slender rigid thread about the length of the calicle itself, which latter is 1.5 to 2 mm. long.

CYATHOPHYLLUM? PICKTHORNII, Salter, sp.

Strephodes Pickthornii, Salter. Sutherland's Journal, vol. ii, Ap. p. ccxxx, plate vi, fig. 5.
1878. *Cyathophyllum? Pickthornii*, Woodward. Geo. Mag. n. s. Dec. II, vol. v, p. 388, pl. x, fig. 5, 6.

A single cup, of the size and shape of the smaller ones figured by Woodward. The lamellæ are connected at the bottom by cross plates. In buff limestone.

HALYSITES CATENULATA, L.

A single specimen in buff limestone with Pentamerus.

From Rescue Harbor; quoted also from Silliman's Fossil Mount of Hall, lat. 63° 44″ N., long. 68° 56″ W., by R. P. Stevens.—HALL'S NAR., p. 594.

STICTOPORA RAMOSA, Hall.?

Many weathered specimens occur in the gray crinoidal limestone along the north shore of Frobisher Bay. It may be the same as the Alveolites? arctica, Wood. Geo. Mag. 1878, p. 389.

HELEOLITES (new species).

HELIOPORA (new species).

"The specimens of corals were very perfect and beautiful, and unlike any figured by Professor Hall in the Palæontology of New York." (R. P. Stevens, Hall's Nar., Appendix X.)

Crinoid stems and fragments are found abundantly, but in all cases round, small, and not determinable.

LINGULA CURTA, Con.

Many specimens, retaining the black, shining, finely-striated shell, and agreeing exactly with Utica and Fort Plain, N. Y., specimens, occur in the black limestone associated in different pieces of the rock with all the other Utica slate fossils met with.

RYNCHONELLA, sp.

Several minute specimens occur, characterized by sharp ribs, very high keel, and deep sinus; in gray limestone with Entomostraca.

CHONETES CONF. STRIATELLA, Dal.

A minute quite convex shell covered with fine ribs not visible except with the lens. The ribs anastomose toward the border, and are separated in groups of from 8 to 10 by grooves twice the width of those between the separate striæ; height 4–6 mm. In gray limestone with Entomostraca.

PENTAMERUS CONCHIDIUM, Dal.

The large mass of magnesian limestone No. 109, from Rescue Harbor, contains a single well-preserved specimen of this species and many cross sections, showing the characteristic septum.

TELLINOMYA LEVATA, Hall.

1847. *Nucula levata,* Hall. Pal. N. Y., vol. i, p. 150, pl. 34, fig. 1.
1875. *Tellinomya levata,* Hall. Pal. Ohio, vol. ii, p. 82, pl. 1, fig. 23.

This species is represented by a single sharply defined cast of the beak and central portions of the hinge plate. Enough is preserved to show that the shell was ventricose, with large incurved beaks and posterior curvature of the hinge plate. It agrees in all points with the figure of the interior of the shell in Pal. Ohio above cited. It occurs in a small fragment of buff limestone from the north side of Frobisher Bay, associated in the same piece with many indistinguishable fragments of bivalves, crinoid stems,and a minute Murchisonia gracilis.?

Fig. 3 magnified three times.

The figure is drawn from a cast in rubber of the impression.

CONULARIA TRENTONENSIS, Hall.

A cast of one side of the shell, retaining in part the substance of the same of deep chestnut brown, shows all the characteristics of this species. In gray limestone with Entomostraca.

GASTEROPODA.

Besides the *Maclurea arctica* quoted by Stevens in the Appendix to Hall's Narrative, page 594, the collection examined by me contains single portions of several species too fragmentary for determination—a small *Murchisonia gracilis,* Hall; a *Maclurea,* and a small turbinoid shell which may be *Cyclonema bilix.*

ENDOCERAS PROTEIFORME, Hall.

1843. *Endoceras proteiforme*, Hall. Pal. N. Y., vol. i, p. 208, pl. xlv–l.
1843. ——? p. 311, pl. lxxxv, fig. 1.

Ten or more specimens of this form are present, which are all flattened, and resemble closely the flattened forms from Fort Plain, N. Y., from the Utica slate, referred by Hall with doubt to this species. Five of the specimens are flattened, showing neither septa nor distinct surface markings, but tapering at exactly the same angle as the Fort Plain specimens. Four retain very distinctly the exterior marking, and agree so exactly with the fig. 3, pl. lix, *loc. cit.*, of the surface marking of *E. proteiforme*, var. *lineolatum*, that it might have been the original from which the drawing was made. The surface is covered with transverse striæ 3 to the mm. Two other specimens show the points of small shells, flattened, septa distant not quite $\frac{1}{4}$ of the diameter. The specimens were found one in a gray limestone associated with crinoid stems, the others in the black shaly limestone with Triarthrus Beckii, Calymene senaria, Lingula curta, Diplograptus dentatus, &c.

ORTHOCERAS LAQUEATUM, Hall.?

Orthoceras laqueatum, Hall. Pal. N. Y., i, p. 206, pl. lvi, fig. 2 *a–c*.

A single impression agrees in the character of the striation with this species. In black shaly limestone.

TENTACULITES.?

Length of largest piece, 1.1 mm.; width, .1–.2 mm. Large masses of the buff limestone, No. 112, are filled with minute tubular tapering cavities, showing traces of delicate transverse striation, now covered with scattered elevations, due to subsequent crystallization apparently of hematite. These may be cast of a minute shell or of the siculæ of graptolites from which the chitine has been wholly removed. They are so numerous, however, and the limestone is so compact and free from carbonaceous matter, that it does not seem possible that they can have been chitinous. Their organic origin is not entirely certain.

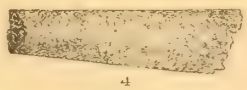


Fig. 4 magnified twenty-seven times.

LEPERDITIA ALTA, Con. sp.

1856. *Leperditia alta*, Jones. Ann. and Mag. Nat. Hist. 2d ser. xvii, p. 89, pl. vii, fig. 6, 7.

Length, left valve, 4 mm.; breadth, $2\frac{3}{4}$ mm. Carapace valve strongly convex, minutely papillose under strong lens, pale chestnut brown, slightly oblong. Hinge-line straight, angles at end of hinge-line not strongly marked, anterior end slightly narrower than posterior, anterior tubercle indistinct, central tubercle not seen.

A small fragment of gray argillaceous limestone was filled with specimens of this species, mostly as single valves and without admixture of other forms. The cleavage face of the rock showed many valves much weathered, the color being lost and the surface rough. They agree with the *L. alta* of the Tentaculite limestone. A few valves slightly larger occur in a second fragment of a limestone like the first, but with fossils of many species, especially Entomostraca, it having furnished all the species of that class described below, besides three species of Brachiopoda.

Fig. 5 *a*, left valve × 4; fig. 5 *b*, cross-section from polished section.

North shore Frobisher Bay.

LEPERDITIA CANADENSIS, Jones.

1858. *Leperditia canadensis*, Jones. An. and Mag. Nat. Hist. 3d ser. i, p. 244, pl. ix, f. 11–15.

Carapace valve minute, mottled brown, uniformly convex, convexity greatest in the anterior third, eye tubercle well marked, nuchal depression sloping equally to dorsal and ventral border. Dorsal margin straight, shorter than greatest length, ventral margin obliquely convex, extremities unequal, anterior angular, posterior broadly rounded. Surface of valve covered with fine irregularly placed pustules in the specimen figured, in another coarsely and irregularly pitted. The small size and the pustulose surface do not agree with the published descriptions of *L. canadensis*, but the fine hair-like pustules, visible only with high magnifying power, would generally be wanting, the other valves in the same piece of stone showing no trace thereof.

Fig. 6 *a*, right valve, x 4; fig. 6 *b*, surface, x 80. Length, 1¾ mm.; breadth, 1⅝ mm.

The specimen figured in a small piece of buff limestone from the north side of Frobisher Bay; other valves in the gray limestone already mentioned.

PRIMITIA MUTA, Jones.

1858. *Cytheropsis concinua*, Jones.? An. and Mag. of Nat. Hist. 3d ser,, vol. i, p. 252, pl. 9, f. B.
1865. *Primitia muta*, Jones. Ibid. vol. xvi, p. 425.

Carapace-valve minute, smooth and shining; deep chestnut brown; in weathered specimens dead white; ovate to oblong-ovate; generally leperditia-shaped in outline, hinge-line straight, ends very unequal, ventral edge curved. Occurs in great abundance in company with the other entomostraca described, and alone in several small pieces of buff limestone. One piece labeled north shore Frobisher Bay, the others without special labels. Forms agreeing with the *P. concinua*, Jones, from the Canadian Trenton, as also with the elongate *P. tenera*, Linnarsson (Vester-

Fig. 7, left valve magnified four times.

göthlands Cambriska och Siluriska Aflagringar, p. 85, fig. 70), from the Trinuclid Skiffer of Sweden accompany the typical forms.

PRIMITIA FROBISHERI, n. s.

Carapace-valve smooth, light-brown, nearly oval, strongly and regularly convex, sloping away from the central portion to meet the road reflected border at right angles. This border is broadest on the ventral side; is thin and must have been applied to the corresponding margin of the left valve like a flange. On this margin are placed 9–10 distinct extremely thin elevated ribs, which run up onto the valve towards a central point in the middle of the dorsal border; of these ribs only six are preserved. From the ventral furrow they may be traced up the valve so far as the shell is present, retaining their radial direction, and not anastomosing as is the case in more recent genera. Just in advance of the middle line of the valve a furrow commences, shallow at the dorsal border, grows narrower and much deeper, and ends abruptly at the middle of the valve, being represented in the interior by a strong elevation which rises nearly to the center of the carapace. This furrow borders at its deepest portion a proportionally large hemispherical elevated tubercle, which passes into the general convexity of the valve without the intervention of any depression except upon the posterior side and for a short distance round onto the under side, where it is bounded by a shallow furrow prolonged from the central sulcus. The description is drawn up from a cast of the interior of a right valve having the shell remaining upon the border and half-way up the side and from the interiors of several valves in good preservation. It is allied to the *Byrichia strangulata*, Jones, An. Nat. Hist. 1855, 2d series, xvi, p. 172, = *Primitia nana*, Jones and Hall, *loc. cit.*, 3d series, xvi, 1865, p. 420, from English Lower Silurian; also to *P. strangulata*, Jones, in Linnarsson Vestergöth. Camb. o. Sil. Af., p. 85. Differs in the broad-ribbed margin, large size, lower position of tubercle and greater convexity. A form which I have not found described occurs in the Tentaculite limestone of Schoharie with *L. alta*, which agrees closely with the above-described species. The state of preservation made it not possible to determine if the marginal ribs were present.

Fig. 8 *a*. cast of right valve, x 4; fig. 8 *b*, more enlarged to show ribs. Length, 1½ mm.; breadth, ¾ mm.

Found in the gray limestone with other Entomostraca.

BYRICHIA SYMMETRICA, n. s.

Carapace-valve flattened, elongate. Dorsal and ventral margins parallel. Extremities rounded about equally, meeting the dorsal border with slight and equal angles. Dorsal marging straight, not quite equaling the longest diameter of the valve. Valve ornamented by two irregularly-rounded tubercles, the ante-

rior prominent, projecting slightly over the hinge-line and running downwards and backwards; the posterior rising abruptly from the broad sulcus and sloping, with flat surface to the point of junction of the dorsal and posterior border. The broad sulcus is hollowed between these two tubercules, passes around them anteriorly and posteriorly, and is bounded on the outside by a ridge which starts at the front side of the anterior tubercle and arches round till it coincides in direction with the ventral margin, which it then follows to the posterior portion of the valve, where it curves round sharply to meet the posterior side of the posterior tubercle. This ridge is highest in the middle, and there sharply elevated and bent slightly toward the dorsal margin, while at both ends it is flatter and less distinctly marked off from the rest of the valve. It is separated from the ventral rim by a deep, regularly concave groove, which becomes broader and ill-defined towards the ends of the valve. The whole valve remotely resembles the cast of a bivalve shell with abnormally deep and large pallial and muscular impressions.

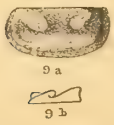


Fig. 9 *a*, right valve, cast of interior, × 5; fig. 9 *b*, end view. Length, 2¾m m.; breadth, 1½ mm.

The description is made from two sharply marked casts, the shell being present only in the ventral furrow, where it is thick, smooth, and light brown.

Found in the gray limestone with other Entomostraca.

TRIARTHRUS BECKII, Green.

The separated heads of this species are very abundant in the black limestones, and the separated cheeks and tails are also present in great numbers. They are all small, the heads being 4–7 mm. in length. The occurrence of this common Utica slate species so far north is interesting, and, taken with its appearance in the Trinuclid Skiffer of Sweden (Linnarsson, *loc. cit.*, p. 70, fig. 27), where it is also of the same small size as here, gives it a wide distribution.

CALYMENE SENARIA, Conrad.

Several small, flattened, well-preserved tails, and one cheek, which belonged to individuals not more than 12–15 mm. long, occur in the black limestone with the other Utica slate fossils enumerated.

PHACOPS, sp.

The pustulose elevated glabella of a small individual has the shape common to species of this genus.

In black limestone.

ASAPHUS, sp.

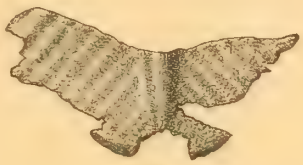
A stout spine, triangular in cross section, and marked on the under side exactly as in Asaphus gigas.

In gray limestone with Entomostraca.

TRILOBITES sp.

I have figured a small pygidium, which is broad and flattened, apparently acutely terminated behind, with thickened rim, and broad, very slightly elevated ribs.

In black limestone.



10

Fig. 10, magnified seven times.

CYPHASPIS? FROBISHERI, n. s.

The only parts certainly belonging to this species are the impressions of two cheeks upon different cleavage faces of a piece of the black limestone with *Triarthrus Beckii*, unless a pygidium upon the same piece, which agrees well with that of *Cyphaspis Burmeisteri*, Bar., in shape, may belong to the same individual. The cheek is thin, flattened, smooth, very remarkable for its angular outline and the very abnormal curvature of the spine. The edge is separated from the rest of the cheek by a deep groove, flat at the bottom, broad in front, and narrowing behind. The border is formed by the curving upward of the crust and not by its thickening, and the spine is a prolongation of this border, having for a time the same dimensions and ending abruptly. The suture starts from a point on one side of the central line and runs across the border, directed towards the central point of the glabella, then continues in a sigmoid curve to the eye, and running around that passes in a curve outwardly convex to meet the posterior of the head at a point just inside the base of the spine. The eye shows marks of six facets placed in one curved line.

11

Fig. 11, magnified x 1.4. Greatest length of cheek, 13 mm.

In black limestone—Utica slate.

APPENDIX IV.

HALL'S CONVERSATIONS WITH THE INNUITS:—1864, 1868, AND 1869.

PAPERS A, B, AND C.

APPENDIX IV.

HALL'S CONVERSATIONS WITH THE INNUITS.

PREFATORY NOTE TO THE EXTRACTS FROM HALL'S CONVERSATIONS WITH THE INNUITS IN THE YEARS 1864, 1868, AND 1869—PAPER A, CONVERSATIONS HELD DURING THE EARLY PART OF HALL'S ARCTIC RESIDENCE, DECEMBER, 1864—PAPER B, CONVERSATIONS HELD ON THE JOURNEY TO AND RETURN FROM THE STRAITS OF FURY AND HECLA, APRIL, 1868—PAPER C, CONVERSATIONS HELD WITH A NATIVE OF KING WILLIAM'S LAND AND WITH OTHERS AFTER HALL'S VISIT TO THAT REGION, 1869.

The extracts which follow show Hall's carefulness to come at the truth in regard to what he was seeking to learn from the Eskimos. His questions and cross-questions of individuals—taking them separately and, at times, when assembled in an *igloo*—evince care and skill. He availed himself of the watchfulness of his faithful interpreter, Hannah.

The publication in the columns of the New York Journal of Commerce of part of the extracts from his journals, to be found in Paper A, created at the time some excitement. Papers B and C are specimens of the talks which are found recorded with care in Books A and B, which have been returned to the Observatory by the courtesy of Lady Franklin's niece, Miss Sophia Cracroft, of London. These two books bear the indorsement of Captain Hall:—

"This tenth day of January, 1871, sent by Express to England to be delivered to Lady Franklin in Trust. Lady F., Miss Cracroft, and Admiral Sir Leopold McClintock may read them; no copy or copies to be made."

PAPER A.

EXTRACTS FROM HALL'S CONVERSATIONS HELD WITH THE INNUITS OF REPULSE BAY IN THE MONTH OF DECEMBER, 1864.

DECEMBER 6TH, 1864.—This night I have had a deeply interesting interview with several of the natives. On the return of the walrus hunters, they almost uniformly call at our igloo during the evening to see and talk with me; this evening *Ar-mou* first comes in. I asked him when he was at Igloo-lik a few years ago and what names of Kob-lu-nas he heard of, that he remembered? The answer was Parry, Lyon and Crozier—the first two were Esh-e-mut-tas (chiefs or captains), but the latter one was not.

Ar-too-a, the An-nat-ko, next came in. He has been to Pelly Bay (Ok-ke-be-gu-loo-a, as the Innuits call it) which is near Neitch-il-le (Boothia Peninsula). While at my igloo Ar-too-a once told me that he had heard of Crozier when at Pelly Bay, that he (C) was one of the Koblunas belonging to the two ships that were in the ice near Neitch-il-le for two years before the white men left them.

I proceeded to ask Ar-too-a the questions of the names of the white men he had heard of from Innuits, who had been to Igloo-lik. He said, Parry, Crozier and Lyon;—he had heard of others, but could not now remember them. I asked him if he had heard a great deal about Crozier, and he replied, with great warmth, that he had; and then went on talking with Ar-mou and Ebierbing, telling them how much he knew.

Oong-oo-too next came in, followed by Ou-e-la and Shoo-she-ark-nuk. The latter two, I knew, would be of great service in communicating important facts, if such were in their possession. The former is a smart, strong, muscular young man, a great musk-ox hunter, but a very small talker. I can never get much out of him in the way of tongue work.

The parties now named were all present. Ar-too-a had become deeeply interested in giving all the facts he knew about Crozier. He drew his brothers Oue-la, Shoo-she-ark-nuk, and my man Ebier-bing into a general conversation with him on the subject. Too-koo-li-too sat at her usual place on the took-too bed before the fire-lamp, knitting a sack of zephyr worsted to keep my nasal organ from freezing when I go out on sledge trips this winter. At the same time she was attentively listening to all that was said, that she might, as interpreter, communicate the sooner to me. I was seated on my stool, deeply absorbed in all that I could understand, which I must confess was very little.

While the parties named were engaged listening to what Shoo-she-ark-nuk was saying, I commenced to tell Too-koo-li-too that I wished her to say that the Crozier (of whom they knew something about as having been at Igloo-lik with Parry twenty-two years after he was at Ig-loo-lik) left the Koblunar country as an Esh-e-mut-ta of one of the two ships that were lost at Neitch-il-le. When I had this in mind, I had somehow out of mind the fact that Ar-too-a had *previously* told me that Crozier, the same one who was at Igloo-lik, was in one of the lost ships at Neitchille. My usual precaution about keeping what I knew about Parry's ships and Franklin's to myself, without letting one word out on my part, was not now adhered to.

I had not got two words out before Too-koo-li-too signaled to me by a motion of her hand to keep silent. She then said, "They are saying something that I will like much to hear." Of course I waited with great solicitude. Too-koo-li-too's face soon glowed with delight as she said; "That same man, Crozier, who was at Igloo-lik when Parry and Lyon were there, was Esh-e-mut-ta (meaning captain in this case, the literal chief) of the two ships lost in the ice at Neitchille. Crozier was the only man that would not eat any of the meat of the Koblunas as the others all did. Crozier and the three men with him were very hungry, but Crozier, though nearly starved and very thin, would not eat a bit of the Koblunas,—he waited till an Innuit who was with him and the three men caught a seal, and then Crozier only ate one mouthful,—one little bit first time. Next time, Crozier ate of the seal he took a little larger piece, though that was a little bit too. One man of the whole number four died because he was sick. The others all lived and grew fat, and finally Crozier got one Innuit with his kiak to accompany him and the two men in trying to get to the Koblunar country by traveling to the southward. The Innuits here think these two men and Crozier are alive yet; think they may have returned to Neitchille, if they found they could not get home to the Koblunar country, and lived again with the Innuits.

The two winters the two ships were at Neitch-ille were very cold. The Innuits never knew such very cold weather—there was no summer between the two winters—could catch no seals or kill any rein-deer at most of the usual places where they were most accustomed to find them.

Relative to the interview described, I was thankful—delighted, indeed, that Too-koo-li-too had checked me when I was about to request her to tell the Innuits present what I had in mind. A most important fact came out in consequence, showing that the Innuits far and near are conversant with all events of this nature that take place in their country. The Pelly Bay Innuits, from what had

been told them by Innuits who had seen Crozier, knew that he (C.) was not an Esh-e-mut-ta (captain) when with the two ships that visited Ig-loo-lik and the other places. But they knew that he (C) was Esh-e-mut-ta when at Neitch-ille. The fact that Crozier was not an Esh-e-mut-ta when at Ig-loo-lik was well known to Ou-e-la, Shoo-she-ark-nuk, and Ar-too-a when they were boys. Erk-tu-a knows this well, and so it is known all the way from here to Ig-loo-lik and even Pond's Bay—I doubt not. How remarkable it is that such matters are perpetuated by a people that have no knowledge of books and writings! But these facts which I now give record to cannot be learned in a moment. Friendship and confidence must be established first, and even then there are obstacles ever in the way, which prevent rapid acquisition of knowledge among this people. I am blessed with having Ebierbing and Too-koo-li-too for my company and interpreters.

DECEMBER 7TH, 1864.—This morning Erk-tu-a, the relict of E-we-rat, and old mother Ook-bar-loo, called on me.

I began my inquiries by asking Erk-tu-a to report to me all the names she could recollect of the Kob-lu-nas she saw when at Ig-loo-lik. She began and continued thus—Paree, he Esh-e-mut-ta (captain); Lyon, he Esh-e-mut-ta (captain); Par mee, he Esh-e-mut-ta-nar (mate on Lyon's ship); Oo-liz-e (on Parry's ship) Cro-zhar, Esh e-mut-ta-nar (mate or some officer not so great as captain on Parry's ship); * * * Erk-tu-a says that Crozier was called Ag-loo-ka by the Innuits. Crozier's name was given to old Ook-bar-loo's sister's son, whose name was Ag-loo-ka, and Ag-loo-ka's name was given to Crozier. The Innuit Aglooka is still living, but called Oo-li-zhum.

After Erk-tu-a said this much I opened Parry's work, "Narrative of 2nd voyage for the discovery of a North West Passage," and turned to the list of officers &c, in the introduction to said work. I readily made out to whom "Par-me" (as Erk-tu-a spoke the name) referred. Chas. Palmer was one of the lieutenants on board of Lyon's ship, "Oo-liz-e" I could not make out. * * * * *

Erk-tu-a said there were dogs at Igloo lik named after Crozier, and also after Parry and Lyon, and so the Innuits would name dogs after me in way of respect to me, and in commemoration of one who had treated their people kindly. This compliment, though to many it might seem funny, is one that touched my heart. * * *

Relative to Sir John Franklin's Expedition, mother Ook-barloo says (very reservedly—in a way of letting me know of a matter that is a great secret among the Innuits) "that two annatkos (conjurors) of Neitchille ankooted so much, that no animal, no game whatsoever would go near the locality of the two ships, which

were in the ice near Neitchille many years ago. The Innuits wished to live near that place (where the ships were) but could not kill anything for their food. They (the Innuits) really believed that the presence of the Koblunas (whites) in that part of the country was the cause of all their (the Innuits') trouble."

Mother Ook-bar-loo continued—"One man would not eat the flesh of his frozen and starved companions, and therefore when her nephew, Too-shoo-ar-thar-i-u, found Aglooka (Crozier) and three other Koblunas with him, Aglooka, who was the one that would not eat human flesh, was very thin and almost starved. One of the three men with Aglooka died, for he was very sick. He did not die from hunger, but because he was very sick. * * *

The two an-nat-kos at Neitch-ille were very bad, for they ankooted on purpose to have the Kob-lu-nas that were in the two ships two years in the ice all starved to death. Sometimes Neitchille an-nat-kos act very badly.

DECEMBER 8TH, 1864.—This evening I have had another talk with Ou-e-la, Shoo-she-ark-nuk and Ar-too-a about some of the men of Franklin's Expedition. The man who caught seals for Ag-loo-ka (Crozier) and some of his men—the three with him—is their cousin. His name is Too-shoo-ar-thar-i-u. When he first found Crozier and the three men with them, Crozier's face looked bad—his eyes all sunk in—looked so bad that their cousin could not bear to look at his face. Their cousin gave Crozier a bit of raw seal as quick as he could when he first saw him. Did not give any to the other three, for they were fat and had been eating the flesh of their companions. It was near Neitch-il-le that this occurred on the ice. This cousin is now living at Neitch-il-le. When Too-shoo-ar-thar-i-u first saw Crozier and the men with him, he was moving, having a loaded sledge drawn by dogs; he was going from place to place, making Igloos on the ice—sealing—he had with him his wife, whose name is E-laing-nur, and children. Crozier and his men had guns and plenty of powder, shot and ball. The cousin took Crozier and his men along with him, and fed them and took good care of them all winter. Beside a high cliff Innuits saw something like Now-yers (gulls) fall down to the ground, dead, and would not touch them, for Crozier had done something to them—they (the Innuits) knew not what. In the summer Crozier and his men killed with their guns a great many birds, ducks, geese and rein-deer. Crozier killed many—very many of the latter. The Innuits saw him do it. A Neitchille Innuit went with Crozier and his remaining two men when they started to go to their country. They had a kiak with which to cross rivers and lakes. They went down toward Ook-koo-seek-ka-lik (the estuary of Great Fish or Back's River). Their cousin liked Crozier very much. Crozier wanted to give their cousin his

gun, but he would not accept it, for he was afraid of it, he did not know anything about how to use it. Crozier gave him his long knife (sword, as Too-koo-li-too and Ebierbing interpret it) and nearly everything he had. He (C.) had many pretty things. Crozier told Too-shoo-ar-thar-i-u all about what had happened, but he could not understand all. This cousin is now alive, and knows all what he saw and what Crozier told him.

The story now is, that Crozier with his two men and a Neitch-il-le Innuit started from Neitch-il-le—started in the summer or fall—for the Kob-lu-nas' country, traveling to the southward on the land. They had a small boat that had places on the sides that would hold wind (air) (Ebierbing said to me.) From their (our informers') description, the boat must have been an India rubber one, or something like it, with hollow places in the sides for wind (air) to hold it up when in the water. (By this it would seem that Franklin must have had in his vessels a boat or boats called Halkett's air-boats, or its equivalent. But I do not recollect of ever reading or hearing about this particular; however, I believe that he (Franklin) must have had something of this kind aboard his ship.) There were sticks or holes for this boat, to keep it open (spread) when needed.

This small boat was wrapped or rolled up in a bundle or pack, and carried on the shoulder of one of his men. The sides of this boat, something like Innuits' "drugs" that could be filled with air. * * *

"In-nook-poosh-ee-jook is the name of an Innuit who went with others of his people aboard of Ag-loo-ka's ship after the Neitchille Innuits heard that the Kob-lu-nas had all left it. This was while Ag-loo-ka and his three men were living on the ice in an igloo with her nephew. In-nook-poosh-ee-jook and his companions got at that time a great many things out of the ship. This Innuit often visited I-willik (Repulse Bay).

At 11 a. m. Old mother Ouk-bar-loo came in, bringing a long, thick slab of powdered walrus ook-sook (blubber) for our fire-lamp. I proceeded to ask her about the interview she had with In-nook-poosh-ee-jook. Ook-bar-loo said: He told her how he, his father, wife, and children, and other Innuits, went to a big tent, and there saw starved and frozen Kob-lu-nas all dead, many with the flesh all cut off from the bones—the head and necks all whole. Around the necks of several were strings of beads. These the Innuits took, besides many tin canisters, cups, knives, and other things. After this, these same parties with others, visited the ship or ships (the old lady could not recollect whether there was one or two), and got a great many things and carried them ashore. No one was on board the ship when these Innuits went to it. No Kob-lu-na's dead body was about the ship.

The Kob-lu-nas, or the Innuits, made a big hole in the bottom of the ship, as if they had wanted to sink it. The Innuits got two big long saws from the ship that the Kob-lu-nas had used to saw ice with and took them to the land. The Innuits saw that nearly the whole of one side of the vessel had been crushed in by the heavy ice that was about it, and thought that was why the Kob-lu-nas had left it and gone to the land and lived in the tents. By and by the Kob-lu-nas froze and starved. Among the things the Innuits got from the ship were a great many ood-loos (Innuit women's knives, like our domestic mincing or chopping knives in the States). These were all good, just what all the women wanted. Every woman had one, and there were more than enough for each woman and girl. Besides these, they got a great many knives for the men, such as pe-louds and pan-nas (small or short bladed, and long-bladed knives), a great many spoons and forks, a good many bright rings for the fingers, a great many round thin pieces of metal (medals and pieces of money, Too-koo-li-too says these must have been, from old Ook-bar-loo's description). Some were red, some white, and some looked like the metal ka-roons (a brass ornament worn on the foreheads of the Innuits here and at Neitch-il-le) are made of. (Too-koo-li-too thinks some of these money and medal pieces were bright gold and others brass).

THURSDAY, *Dec'r 15th*, 1864.—1.30 P. M—The astounding news that Ag-loo-ka (Crozier) arrived, with one man, among the Kin-na-pa-toos, his powder and shot nearly all gone! I must give the particulars of the above startling news, as given me a few moments ago. At the time I got the above information there were, as usual through the day and evening, several Innuits in our igloo. The An-nat-koo's (Ar-too-a's) wife, and the wife of ——, and the old man, See-gar, were all seated on the dais or bed-platform, while Too-koo-li-too was at her place by her fire-lamp, engaged telling these visitors about Ag-loo-ka (Crozier). Too-koo-li-too had just made the sympathetic remark—"What a pity it is that Ag-loo-ka and the two men who started together from Neitchille for the purpose of getting to the Kob-lu-nas country had never arrived." Old See-gar listened, as did the other Innuits present, to all that Too-koo-li-too said, and when she made the last remark, See-gar sprang from his seat, quick as a flash, and looking staringly at Too-koo-li-too, exclaimed with great force and surprise, "What! Ag-loo-ka not got back! Why," continued See-gar, "the Kin-na-pa-toos (Innuits who belong to Chesterfield Inlet) told me several years ago that Ag-loo-ka and one man with him arrived among their (the Kin-na-pa-toos) people, and that they (Ag-loo-ka and his men) had gone to where the Kob-lu-nas live further down the Big Bay" (to Churchill or York Factory, as Too-koo-li-too thinks See-gar tried to explain it). I was greatly in-

terested as well as surprised, in what See-gar said, as now recorded. I at once had Too-koo-li-too ask old See-gar several questions, which he answered by communicating as follows:

Ag-loo-ka, of whom he (See-gar) had heard Too-shoo-ar-thar-i-u tell all about at the same time that Ou-e-la and his brother saw him, arrived among the Kin-na-pa-toos, having one man with him, and his powder and shot were nearly all gone. The Kin-na-pa-toos told him (See-gar) about this before, See-pee-lar (Captain E. A. Chapel) and his brother came the first time into this bay (which was in 1860). The Kin-na-pa-too Innuits said that Ag-loo-ka and his man had gone on and had arrived at the nearest place where Kob-lu-nas live, which must mean Fort Churchill. Too-shoo-ar-thar-i-u told him (See-gar) (this was in the winter of 1853–4 at Pelly Bay) that Ag-loo-ka would probably get home to where the Kob-lu-nas live, unless somebody killed him, for he (Ag-loo-ka) knew all about how to hunt and kill took-too (rein deer) and nearly everything else that the Innuits could kill; knew how to keep himself warm, how to live, just as the Innuits do; as he (E.) had lived and hunted with him (Too-shoo-ar-thar-i-u) and with many others of the Neitchille Innuits. Ag-loo-ka knew all about everything that the Innuits knew. The Kin-na-pa-too Innuits told him (See-gar) about Ag-loo-ka and his men; did not see them; but said that they had their information from others of their people, who did.

December 22*nd*.—Old mother Ook-bar-loo gives me a call every morning, oftentimes before I am up; but, nevertheless, she is always welcomed, as I am really glad to see her, and have "talks" with one so filled with the traditions of her people. Not only does she call every morning, but usually repeats her visits two or three times during the day and evening. Her second call to-day was at 11 a. m. I was engaged writing at the moment of her coming in, and, after my usual greeting, continued on with it. Old mother Ook-bar-loo took her seat on the snow platform directly before me, and she and Too-koo-li-too did as all women will do—went to talking.

A few minutes before meridian Too-koo-li-too said to me: "Ook-bar-loo has been telling me about a *witch*"—as I understood Too-koo-li-too to say. I dropped my pen and looked Too-koo-li-too directly in the face, supposing that I might catch the peculiar smile indicative that she had a joke on hand for me; but I saw she was in earnest, and that something of unusual interest must be in store for me. I therefore earnestly asked, "What did you say, Too-koo-li-too?" She replied, "The old lady has just been telling me of a watch just like yours (mine) only not so large, that she saw when at Pelly Bay, which was all in complete order,

and had a long chain to go around the neck and a key; and the old lady, who had it, told her (Ook-bar-loo) that it once belonged to one of the many Kob-lu-nas that had died near Neitchille." I need not say that I was an attentive listener to this. At once I left my "tripod" (seat of three legs), and set myself flat down on the fur-bed deer-skins beside both Too-koo-li-too and Ook-bar-loo, and requested the old lady to tell me all about this watch.

Through Too-koo-li-too she said: "When she was at Ok-kee-bee-jee (Pelly Bay), which was in the winter of 1853–4), she saw a woman who had a watch, with chain and key, which she always kept very carefully by her. This mother was mother-in-law of In-nook-poosh-ee-jook, the man who told her (Ook-bar-loo) what she related to me the other day. This mother of In-nook-poosh-ee-jook told her all about where and how she got the watch. She and her husband went to a big tent not very far from Neitchille, and among the frozen mass of human bones and bodies that were lying around in it she saw one Kob-lu-na body that had a bright white (probably silver) chain around the neck. She knew at once what the chain was for, as some of the other Neitchille Innuits had just come into possession of several watches and chains, which she saw."

"The body of this man was lying on one side, and was half imbedded in solid ice from head to feet. The way the chain was about the neck and running down one side of the body indicated that the watch was beneath it; and therefore, to get at the watch, she found a difficult and disagreeable task before her. Neither she nor her husband had any instrument with them that they would use for any such purpose as was desired; therefore, while the husband was seeking around, in and about the tent, collecting such things as he fancied would best suit him, she procured a heavy sharp stone, and with this chipped away the ice from all round the body till it was released. Continued old mother *Ook-bar-loo*, in a truly sorrowful tone of voice: This woman told her that she could never forget the dreadful, fearful feelings she had all the time while engaged doing this; for, besides the tent being filled with frozen corpses—some entire and others mutilated by some of the starving companions, who had cut off much of the flesh with their knives and hatchets and eaten it—this man who had the watch she sought seemed to her to have been the last that died, and his face was just as though he was only asleep. All the while she was at work breaking the ice near the head, especially the ice about the face, she felt very, very bad, and for this reason had to stop several times. She was very careful not to touch any part of the body while pounding with the sharp stone. At last, after having pounded away the ice from around and under the body, her husband helped her to lift it out of its

icy bed. Still she was troubled to get the watch from the frozen garments with which the body was completely dressed. Finally, the watch and key and chain were obtained entire; and the woman now keeps them very choice, in commemoration of the terrible feelings she had when getting them from the dead Kob-lu-na, whom she dug out of the ice with nothing but a heavy, sharp stone. I asked the old lady if this watch was like the one I carried on my person, at the same time showing her Eggert & Son's pocket-chronometer (loaned to me by those parties, of New York), which is an old-fashioned one, of large size, in a heavy double silver case. She had told Too-koo-li-too that it was not so large as this, and she said the same to me. I then drew out from under the took-too furs, where I keep it, a small pocket-chronometer in silver cases (which I have in my possession by the kindness of Augustus H. Ward, of New York). Old Ook-bar-loo said it was like this, of the same size and kind; that is, it was of white (silver) metal. It was not of such metal as my gold pen, though she (Ook-bar-loo) had seen many parts of watches—watches that had been taken to pieces—that were of the same color with my gold pen."

PAPER B.

SOME TALKS WITH INNUITS: NORTH OOGLIT ISLANDS, APRIL, 1868.

"After the death of Kia, Koo-loo-a thought he would go deer-hunting in that part of the country where Kia had seen the strange person, as he believed he might find something that would be useful to him thereabouts, and as he wanted some wood with which he might make arrows and spear-handles between Ar-lang-ung-ū and the N. W. cape of Melville Peninsula. He hunted, but found nothing he sought for. Here I asked if he, Koo-loo-a, during his search, found any piles of stone, called In-nook-shoo by the natives. He replied that he did. I then got Rae's chart and placed it before us. Koo-loo-a soon comprehended its nature, and then said that the extreme N. W. part of Melville Peninsula, and the sea by it of the chart was not as the land and water really are. He said that quite a large river runs from the eastward nearly parallel with Adge-go (Fury and Hecla Strait), and empties its waters into a bay very near to Cape Ellice of Rae's discovery in 1847. Near the river, south side of it, Koo-loo-a found a Monument of stone on a crest of rising ground, and a little to one side, west of the Monument, where a curious kind of *cache* had been made of stones. The cache had been opened and the stones all thrown one side. The Monument and the cache stones all showed a great degree of freshness. He did not think they were the work of any Innuit.

He looked carefully about where the cache had been made for the object to learn what had been deposited there. No signs that any meat had ever been put there. He does not think that any Innuit had ever before been so high up from Ar-lang-na-zhū (Garry Bay of Rae's chart). Koo-loo-a was with Kia on the deer-hunt when the latter saw the strange man, though not present at the time when Kia sighted and followed the strange man. A short time before Kia saw the stranger in black clothes Koo-loo-a felt thirsty and came to a lake. He had laid himself down to take a draught of water, and at the very instant he was placing his face down to it, he heard a loud crack, which he thought must be of a gun, for when small and living at Too-noo-nee (Pond's Bay) he had become familiar with the reports of the guns of white men that came there to kill whales. He was at the time so far from the sea that it could not have been the noise of ice cracking. Kia was very particular in telling him all about the strange man he had seen on Koo-loo-a and Kia meeting each other. The strange man was tall and carried some long thing on his shoulder and walked very fast. He had a cap on his head that was independent of his coat, but there was a hood to the long dark coat he had on. Kia kept himself hid behind the rocks and followed the strange man—for some time. Not long after Kia saw the strange man, that he (K.) thought must be an Indian; Kia heard a loud crack, which made him think of ice cracking, but the sea was too far off to hear so plain.

Friday *April 10th*, 1868.—This another gloriously fine day—succeeding days of cloudless ones. VIII^{h} 30^{m} A. M. With Ar-tung-un I am now to have a talk. I may here say that Too-loo-ar-chu and Ar-tung-un are both old men who remember well Parry & Lyon's visit to Ig-loo-lik. Parry was the attata (or father, so called of Too-loo-ar-chu, & as he (T.) says), Parry wanted much to have his parents consent that he should go home with him to England. Too-loo-ar-chu first saw Parry & Lyon at Nu-ee-u-new-gu-a (Winter island) Too-koo-li-too my Interpreter.

I now ask Ar-tung-un if he ever heard of Et ker lin (Indians) being in this country. Ar-tung-un says many years ago a little while before Koo-pa and his companions got so frightened by Et-ker-lin, many natives were there stopping at a place called Ing-near-ing up a large Bay to the N. E. of Ig loo lik where one night in the fall of the year just before the time for snow the dogs commenced barking furiously when many Innuits sprang out of their beds and went out of their tents to see what was the cause. Some four or five Et-ker lin (Indians) were seen passing along each conveying in his hand something like a stick. It was not so dark but that their figures were distinctly seen cutting sharply the back ground, which was the sky. Ar-tung-un was not one of the natives that saw those Indians for

he was too late getting out of bed, but not thinking it possible there could be any Kob-lu-nas about he thought the strangers must be Indians. The Innuits were all so frightened that the next day they removed from Ing-near-ing to an island Ki-ki-tuk-che-ūk. Following the removal many Innuits together went deer hunting when two of their number Ar-tung-un one of the two stopped while the others went on—stopped to hunt deer together. The two men or natives Ar-tung-un & an Innuit now dead, Al-er-gaite, were walking when all at once they heard the bang of a gun as Ar tung un thought, for he had heard guns fired many times when Parry and Lyon's ships were at Ig-loo lik—then looked around to see what made the noise and by and by heard another gun report when they saw the smoke as of a fired gun not far off, arise from behind some land & immediately two took too (deer) came running swiftly from that same place from whence they heard the gun and saw the smoke. Then Ar-tung-un and his companion were terribly frightened and ran to their tents and at once removed their families from the main land to South Oo glit by the means of their ki-as; the distance to Ing-near-ing, two sleeps or *three* days from this island, N. Oo glit. Never saw anything more of those Et-ker lin.

Now Ar-tung-un tells about his son Koo-pa and other Innuits that saw Et-ker-lin. One time (not a great whileafter the above) Ar-tung-un & Al-er-gaite went deer hunting at the same place where they went deer hunting before together when they heard the gun reports & saw the smoke at the last report. The particular place Ar-tung-un now marks out on Parry's chart & he shews the place to be by one of two or three small lakes that extend to the Westward of the very large lake I discovered and passed over last year on my return to Repulse Bay from Igloolik. The place is near the line of mountains Parry has upon his chart & on a parallel with Og-big seer ping, or as Parry calls it *Agwiperwick*. They killed two deer & made a cache of them & returned to their tents when they sent three boys after them. The boys were Koo-pa, In-nū, & Kia; the latter (Kia) In-nu-men's brother. *Al-er-gaite* was the one who returned to the tent first; that is, he got back before Ar-tung-un for the latter remained out overnight to watch a deer that he had shot with an arrow which remained sticking in the deer's side. Al-er-gaite was the one that sent the 3 boys after the two deer. When Ar-tung-un got back the boys had returned without the deer meat—had left the meat, dogs and all, for they had seen four Et-ker-lin near where the two deer had been deposited. After the deer had been put a part upon the backs of the dogs and a part prepared and put upon their (the boys') own shoulders they saw upon a hill not far off four Et ker lin each with something like a stick in his

hand and heard a noise like foxes, then great laughter. The fox noise and laughter the boys did not hear until they had thrown away every thing and were running away. Before the boys ran they saw the largest or tallest one of the Et-ler-kin who was very tall make motions with his right hand which was raised high over his head. The motions were swinging motions from the North to the South. Soon as the frightened boys got back and repeated what they had seen, the Innuits all were alarmed and the lifting stone was resorted to, which said the 4 strange beings *were not Et-ler-kin.*

Ar tung un says that a few years ago he was out hunting at Kee-wee-gee a place little back of the line of mountains that run North or Westward of Am-i-toke on a parallel of Am-i-toke when too frightened deer ran swiftly past him. Soon large grey dog came swiftly on their track which the dog followed by scent. When the dog saw him (Ar-tung-un) it stopped. As Ar-tung-un was about to fire an arrow at the beast (dog) he saw that a short string was about its neck—when he carefully unbent his bow and tried to coax the dog to him Kod-lu-na way. The dog appeared playful but was too shy to allow Ar-tung-un to catch hold of the string. The dog was following the deer *from the North* & when Ar-tung-un had tried to catch the dog it ran away to the N. W. as Ar-tung-un shows on Parry's chart. The dog had short hair & it did shine very much something like one of the dogs Parry & Lyon had, though larger. It had short ears. String short; only touched the ground. His curiosity so excited about the strangeness ness of the dog he did not notice *what kind* of string it was about the dogs neck. The time that he saw the dog was before Dr. Rae came to Iwilllik the last time. The four or five *Et ker lin* at Ing-near-ing were seen *before Dr. Rae* came here the first time. The time the four Et-ker-lin seen by Koo-pa & the other two boys was after Dr Rae was here first time as Ar-tung-un thinks and remembers. The dog a very small body, long thin legs & poor, the tail long & curving upward just like one Parry had only much larger; that is, the dog was the same build or form. While Parry's was black, the dog he saw with string around his neck was grey—(like in color one of mine old See-gar let me have, "grey.") Ebierbing says it surely was a grey hound" from Ar-tung-un's description. Ar-tung-un says they had three dogs on board Parry and Lyons ships. Ar-tung-un having said this; I turned to pages 297 & 299 of Lyon's Private Journal & see that there was a large Newfoundland dog, a grey-hound belonging to Parry & a terrier "Spark" belonging to Reid on board of the "Fury & Hecla."

(It is with great exertion that I have kept about to day for I have been and am now really sick. I caught a severe cold on the day we laid over at our first

Igloo encampment on the sea ice of Fox Channel at Oo-soo ark ū. Thus with my sprained leg I am forced to think myself partially if not wholly an invalid.)

"SATURDAY, *April 11th*, 1868.—The present notes I make + morning, for not until this morning, since Friday night, have I been able to rise from my couch. I shall pencil the notes as if made at the date of the heading.

This morning, according to my previous arrangement, Nūb-er-lik, accompanied by Frank Lailor, my servant, started off with my sledge and team of dogs for I-gloo-lik to get a load of walrus meat belonging to Nūb-er-lik and Too-goo-lat, which meat is for me and party to use on my proposed journey to Fury and Hecla Strait to the Western Sea of Ak-koo-lee. Very many calls have I had to-day from the now numerous natives here, all sympathizing in my sickness. Almost every hour a family from Ping-it-ka-lik arrives here, at once coming in to see me, and then proceed to erect an igloo and place their household effects in it. My arrival has caused a small village to grow into quite a city.

The old woman Ar-na-loo-a, of Parry fame, called in to-day, being her 2d call since her arrival here. She expressed deep sorrow that I was sick, and said she greatly desired that I would soon be about again. She says that she was with her husband many years ago when he was hunting deer not a great ways from the mountains west of Am-i-toke. He was on one side of the pond and she walking on the opposite side. Her husband found a tenting-place at the foot of a mountain close by the pond. He found there a large oot-koo-seek, painted red, and a tin canister of same color, and he saw half a plate down in the water of the pond. There were strong indications that salmon had been cooked in the large tin can, for there were salmon-bones about the can. Everything looked fresh, as if done not long before, for there was no moss or rust about the tin cans. Yet she and her husband thought no one could have left these things there but Parry or some of his men. The large can now at Too-noo-nee-roo-shuk. The small one was given to her brother, who is now near Ig-loo-lik. There was a fire-place of stone by the tent-place. She saw these things soon after Ar-tung-un found them. Ar-na-loo-a saw the tenting-place near the foot of the mountain by the lake of the party that must have left the cans and made the fire-place. This mountain is some distance to the ——— of the wall of mountains that extend far to the northward back or west of Am-i-toke. This evening an Innuit by the name of In-nū came in to see me, he having just arrived from Ping-it-ka-lik, where he and family are stopping. I recognized him at once as having seen him at Ig-loo-lik on my visit last year. Knowing him to be an Innuit who was of the party of the three boys who saw the reported four Et-ker-lin many years ago, I raised my head

from my couch and asked him if he had ever seen any Et-ker-lin. He answered quickly "Na-o" (no). Following this, he hesitated a moment, and then corrected himself, and said, many years ago he and Kia and Koo-pa together went after some deer-meat where some deer had been killed; saw three Et-ker-lin. He then most earnestly and most eloquently described the incident, the same, save a few minor points, as Koo-pa had told me at Repulse Bay a short time before starting on this journey."

April, 12th, 1868, now 1h P. M.—Ar-tung-un present as well as half a dozen other Innuits, large and small. I now ask Ar-tung-un about his once finding an oot-koo-seek that once belonged to white men (as told me by his son Koo-pa, and secondly by his wife Ar-na-loo-a yesterday). Old Ar-tung-un has been ankooting and no answer to my question above as yet. Parry's chart before him all the time while ankooting, his withered hand coming down now and then for its fate. I had placed it in our laps for the purpose of his showing the locality upon the spread chart so forcibly that I felt alarmed where he found the oot-koo-seek. He is now through ankooting, and proceeds to tell about the matter.

Ar-tung-un was hunting took-too one summer a long time ago one day's travel from the line of mountains eastward, nearly on a parallel with the point where Lyon turned back when seeking to find a pass through the mountains to the western sea in 1823, when he came to where there had been a tenting-place—the shape of the tent as shown by the stones that had been used to fasten it down square or oblong, long and narrow. It was not such a tent as the Innuits use. The particular spot, near base of a mountain and alongside of a small lake.

Alongside of the lake he found an ook-koo-seek, about 1 foot by 15 inches and 18 inches deep, as shown by Ar-tung-un's measuring with his hand on Parry's chart. It was tin, and painted red—completely inclosed except a hole in the top of about 3 inches diameter. Inside were some pieces of salmon bones. Besides this oot-koo-seek he found a round can about the size of a tin kettle hanging by our fire-lamp, and this was painted red too. No top to this, but there was some very white tallow in it. Never saw any cans painted like this on Captain Parry's or on Lyon's ships. This can was painted all over on the outside, while those on Captains Parry and Lyon's ships were only painted on the tops, with letters on the tops. On the other side of the fresh-water pond found an earthern stone jug, that is, as Ebierbing says, a jug like one Ar-mou gave me some seal-oil in a little while before we left Repulse Bay, which was an earthen stone jug of light color. This jug Ar-tung-un found had its top broken off. These cans Ar-tung-un found were not rusty, nor was there any moss about them; was very much surprised at

the freshness of everything about them, for he certainly thought that nobody but Parry or some of his ships' companies could have tented there and left those things. Alongside of the tenting spot was a fire-place of two stones and which were blackened with smoke. The fire that had been used was the Est-shu-tin (Andromeda tetragona), for a little of it was there in a little pile by the fire-place. Everything looked as though it had been done only a little while before. The smoke on the stones would not have been there on simply burning Est-shu-tin more than two or three years, and the wood would have been white and looked very different from what it did in less time, says Ar-tung-un.

The time when he found these things was before he heard of Dr. Rae being at Iwillik the first time. He heard of Dr. Rae being at Iwillik the next summer after Dr. R. left, which was in 1847. Ar-tung-un does not now think it possible that these things could be left as he found them by Parry or his men, for the salmon meat that he found in the large red can would have gone, and everything else would have looked much older altogether than they did. Koo-pa and the other two natives with him saw the four Et-ker-lin before Ar-tung-un found these things. The place where the Et-ker-lin were seen was not far from where Ar-tung-un found the tenting-place and the things now described. This much has Ar-tung-un told me as a man speaking without any thought of deception. I can read the man like a book. He means to tell the truth, and only the truth.

An hour after the above interview I was present at a seal-feast at Nood-loo, where was congregated a large number of Innuits; and when through with the feast, with the aid of my "Joe" (Ebierbing), I had a talk with Ar-tung-un, in presence of all the Innuits there, for the purpose of testing the memory and accuracy of the old man. I asked him to tell me about the little dog which was on board Parry's and Lyon's ship. He said the little dog was a great favorite with everybody, and was a spotted one; one time a wolf came about the ships, and this little dog, with Parry's dog, which was a black one, ran after the wolf, when several white men hastened after the dogs to bring them back. After a while the men returned, bringing Parry's dog, but they could find nothing of the little pet dog; so all concluded that the little dog must have been killed and eaten up by the wolf. Next day (continued Ar-tung-un) some of the white men went out to see if they could find out what really had become of the little dog. When they returned they brought the head, it being all that they could find of the little dog. He could not remember the name of this dog, but on my telling him it was "Spark" he then smiled and said it sounded just like it. The old man has not only told the facts about this little dog—a terrier—as related by Lyon, whose work I have

with me, but has told this much more, that the dog was spotted, and that its head was found. I asked Ar-tung-un if Parry or any of his (Parry's) people ever had a tent or a party at King-me-toke-big for the purpose of killing ducks in the summer or for any other purpose. He said "No"; the reason some Innuits think so is because some beans and what was conjectured to be a Kob-lu-na tenting-place were found there. Ar-tung-un said Parry and Lyon used to have hunting parties stationed at Ar-lang-nūk, but not farther south.

North Oo-glit Isles, *Monday, April 13th*, 1868.—This morning it was found that the ice-floe was passing in upon the island from the eastward; therefore the walrus-hunters were aroused early. Before VI^{h} A. M. my igloo had the better half of a very huge walrus on its floor, which Too-goo-lut, brother of Ik-kū-men, now of Repulse Bay, killed as soon as he got upon the drifting-ice. Soon as the walrus was killed, Ebierbing took our dogs and drew in the part as indicated above.

I am waiting here at N. Oo-glit Isle for the natives to get a sufficient supply of walrus-meat for me and party to make a journey to the northern part of Melville Peninsula adjoining Fury and Hecla Strait, and then search for white men, or such indications as may exist there to prove the truth of the many reliable statements that have been made to me by some of the Innuits now of Repulse Bay but formerly of Ig-loo-lik, and by some of the natives of this place; I am stopping also for more kow (walrus-hide) for the dog's food.

Wednesday, *April 15th*, 1868.—Now, X^{h}–10^{m} A. M., and I have just had a most prompt response to my invitation for certain Innuits to come to my igloo and have a good talk with me. The following Innuits are present seated around me on our bed-platforms in our capacious igloo:

Old people that saw Parry: Ar-tung-un and wife Ar-na-loo-a, Ag-loo-ka, Koo-loo-a, Too-loo-ar-choo, Oo-shoo, daughter of Tuk-kee-lik-e-ta; Tu-mu-king, In-noo-zhoo, Ek-ke-ra, In-nū, wife of Arng-na-look-shoo-shark; Ebierbing and Too-koo-li-too; Papa and wife.

The talk begins with In-nu (Joe and Hannah, interpreters):

One time long ago In-nu, Kia, and Koo-pa went after some deer meat. When they got there, they saw three men on the top of a hill close by; they had such clothes on that they shook very much in the wind. They all were sure they were not Innuits, but thought them to be Et-ker-lin (Indians). In-nu was so frightened he cannot remember what these men had in their hands. Cannot tell whether their clothes were light or dark. The place, near the high land west of Am-i-toke, between the large lake Tess-u-e-ark and the high land west of it; the large lake,

the one I and Ou-e-la passed over from Ig-loo-lik last year. Soon as he, In-nu, and the other boys saw these Indians they threw away their deer meat, leaving the dogs with meat on their backs, and then ran with all their might for home. * * *

Koo-loo-a says that at the same time he was hunting with Kia he had killed a deer and sat himself down on a rock and eat some of the meat. When he was through eating, he went to a small pool or lake to drink. He had put his head down, and just before getting his mouth to the water he heard something crack, which, he says, was *ti-ma-na-to* (the same) as the crack of guns;—he had heard the crack of guns when living at Too-noo-nee (Pond's Bay). He could not tell from which direction the sound came on account of his position in the act of drinking; looked about, but could see no one, and did not hear the noise again. The place was near the N. W. extreme of *Melville* Peninsula, as he, Koo-loo-a, points out on Parry's chart. Same day Koo-loo-a heard the crack, as he thought, of a gun; while walking around he came to fresh tracks on some grass and the tracks longer than his foot, the tracks so fresh that the blades of earth, grass had not all regained their upright position. Some of the grass was then gradually lifting up as it had been trod upon. The steps long and foot-marks "turning out."

Next morning after hearing the crack and seeing tracks both Koo-loo-a and Kia moved their tents and families away from that place. The next morning after moving, Koo-loo-a went to work fixing the skin of the deer he had killed.

As Koo-loo-a was late in getting ready, Ki-a started off deer-hunting alone. By and by Kia saw a man coming up the hill on which he (Kia) was, coming directly toward him. Kia thought at first the man to be Koo-loo-a, but on looking longer and more observingly Kia saw his mistake, for it was not Koo-loo-a, but a strange man having a cap on his head that was distinct from his coat. He saw that he (the stranger) had strange clothes on and carried something strange in a strange way on his shoulder. Kia could not, from his position behind the rock, see much of the stranger's face; the clothes not black nor white; coat on that came down to or almost to his knees; the make of clothes altogether different from Innuits. The stranger had something across his shoulder running diagonally; this something was long and wide at one end and narrow at the other end. He was walking rather fast and going directly toward the point on N. W. extremity of Melville Peninsula, as showed by Kia on Parry's chart. Kia followed the stranger up for some time and looked sharp at him. Kia kept himself hid among the rocks all the time. Next morning Kia and Koo-loo-a moved their

tents and families to the same place as when Kia saw the strange man, and then they all saw the stranger's tracks, which showed a long foot narrow in the middle. Same day Koo-loo-a, while hunting, saw the monument and cache stones he has before described. From there (the place where the tents were, the place where strange man had been seen) Koo-loo-a and Kia with their families removed down to Ar-lang-na-zhū (Garry Bay), and they saw nothing more of the kind he (Koo-loo-a) has been describing. Now 0^h 30^m P. M.; Koo-loo-a and all the Innuits are asked to get at the year when the above took place. In 15 minutes the answer comes by the show of 13 raised fingers = thirteen years ago last Fall. This brings it out that it was in 1854 that Ki-a saw the white man that I have not the least doubt was one of Sir J. Franklin's men. * * *

Now I commence a talk with Oo-shoo, the wife of Too-goo-lat, the latter the brother of the good and kind-hearted In-nu-men, now of Repulse Bay, but lately of Ig-loo-lik; Oo-shoo is the daughter of Tak-ee-lik-ee-ta, whose portrait Lyon so faithfully drew for Parry's Narrative of his second voyage for the discovery of the N. W. Passage. Oo-shoo says that she was at Koong-wa (the Narrows uniting the N. Pole Lake with Christie Lake) many years ago, where a party of her people was stopping, deer-hunting, in the fall. There at the Narrows deer were killed, and some placed on deposit under stones; a pile of Est-shoo-lin (dwarf of shrub Andromeda tetragona), for fuel, was picked by Oo-shoo and the wife of Qua-sher. By and by Qua-sher and Too-goo-lat took their ki-as and proceeded on toward See-jāk-big. Too-koo-lat's step-father (an old man), with the two women and Oo-shoot and Kan-wong-a (wife of Qua-sher) stopped a while at Koong-wa, then moved along on the land by Christie Lake in the direction Qua-sher and Too-koo-lat had proceeded. Half-way to Nu-ker-ta (the place where Ar-too-a was drowned) the woman and the old man made a stop, tenting there. While the old man remained at the tent, the woman, Oo-shoo and Kan-wong-a, went back to Koong-wa (the Narrows) after some meat and things they could not carry the first time, and then, after getting what they wanted, they started back. By and by, wanting to rest, they sat down on a stone, and soon Oo-shoo saw what she thought to be two Innuits; soon came to the tracks of two men, which greatly frightened the women. The tracks were those of two men—of one large man; the tracks of the two narrow in the middle and long. Before the women got to their tents they heard a noise, a shouting noise, but they thought it must have been the old man they left at the tent. When they got back to the tent, Oo-shoo asked the old man if he had been shouting, and he said no. They told the old man all about what they had seen and heard. * * *

PAPER C.

JOTTINGS ON A SLEDGE JOURNEY.

I.—INFORMATION PICKED UP MAY 8, 1869.

Crozier had a little book as he sat in Ow-wer's tent, and wrote notes. He said, while in the tent, "Ag-loo-ka wonger," patting his own breast. Outside, he said he was going to I-wil-lik, making motions with his hand in that direction. No dog with Ag-loo-ka's company; now-yers, geese, and ducks hanging to the boat. One man only very fat, the others all poor. One man with Crozier in Ow-wer's tent said, Tier-kin wonger. One man with one of his upper teeth gone, and one with marks on the indent or saddle of his nose. Trouble thought to be among the men; but not so. They were putting up the tent and stopped, staring at the Innuits. When Crozier spoke to them then, they at once resumed their work. The Innuits left Crozier and men encamped there, and moved inland, suspicious that they abandoned starving men. Crozier described to them the ice destroying their vessel, his men dying; the full meaning comprehended afterward by the Innuits. An awning over the boat, roof-like. No sword worn by Crozier. In a little bay were Crozier's party when the Innuits first saw them. One man cross-eyed or squinted. Same boat found on mainland, (or rather isle, as the tide is high on the west side of inlet of Point Richardson.)

Crozier, while in Ow-wer's tent, eat a piece of seal, raw, about as big as fore and next fingers to first joint.

II.—MAY 11, 1869.

Poo-yet-ta was the Innuit who first found these remains of the five whites. The remains, some not buried, but some found lying down on the high parts of the island, all close together, and each fully dressed; flesh all on the bones, and unmutilated by any animals. Next to Too-loo-a's body, was one preserved-meat can. This can found by Poo-yet-ta beside the body of Too-loo-a unopened. It was opened by the Innuits and found to contain meat and much tood-noo with it. No bad smell to it. The contents eaten by the Innuits. The meat and fat very sweet and good. A jack-knife found in the pocket of one of the five men.

The graves of the two men (white) that are buried on the point of King William's Land on the east side the mouth of Peffer River were found by Nee-wik-tee-too, a Neitchille Innuit now dead. His widow, the old lady with shaking head at twenty-seventh encampment, whom I saw when there. The bodies buried by

placing stones around and over them; the remains facing upward, and the hands had been folded in a very precise manner across the breasts of both; clothes all on; flesh all on the bones. On the back of each a suspended knife found. The bodies perfect when found, but the Innuits having left the remains unburied, after unearthing them, the foxes have eaten meat and sinews all off the bones. A tenting-place of the whites close by where these two men were buried. Many needles and one nail found by the Innuits at this tenting-place.

These remains found the same spring as those of this island, Kee-u-na. There being nothing for the subsistence of any living thing on the isle, it is therefore called Kee-u-na.

The boat on the west side of the inlet—that is, west side of Point Richardson—was found same season of same year as remains at Kee-u-na. A keg of powder found at the boat, and much of contents emptied on the ground; a gun or two found there. The nature and use of these things not known to Innuits till they saw Dr. Rae in 1854 at Pelly Bay. Poo-yet-ta had seen guns of Ag-loo-ka when at Neitchille, but did not know the nature of the black sand stuff (powder). An igloo was blown to atoms by a little son of Poo-yet-ta and another lad, who were afterward playing with the powder canister having some of the black stuff in it. They dropped some fire into the canister through the vent or opening; their faces were awfully burned and blackened with the explosion; no one was killed, but the igloo completely demolished. The grave and remains were in same perfect methodical state when found as those at the two at the mouth of Peffer River. This grave on King William's Land about due north of Kee-u-na. The body dug up and left unburied by the Innuits. This white man was very large and tall, and by the state of gums and teeth was terribly sick (bad state), as In-nook-poo-zhee-jook described.

III.—TALK IN AN IGLOO ON TODD'S ISLAND, MAY 14, 1869.

Now, noon and the wife of Tük-pee-too present in our igloo at my request, having understood that she has seen some of the skeleton-bones of the five men who died on this island, Kee-u-na (Todd's Isle); her name, E-vee-shuk. I now, with Jack's assistance as interpreter, ask her two questions: Did you see anything of the men who died on this island? Answer. She has seen five skulls of the white men who died a long time ago here. Did you see Too-loo-ark? Answer. Saw the bodies of four white men in one place on the island, and of Too-loo-ark a little way from the four. When she first saw them flesh and clothing on all the men; the bodies entire; and after making tupiks near, the dogs devoured much of the

flesh of the kob-lu-nas. It was some time after this that she saw the five skulls she first spoke of as having seen. She saw these bodies entire one winter after Poo-yet-ta found them, and the clothes these men had on were *black;*—their kum-mins (boots) those men had on were of the same kind of leather as the belt I have given to In-nook-poo-zhe-jook; tanned leather from the United States. Were these men buried? Answer. No, they were lying as they had died, on the top of the ground. Where are the skeletons now? Answer. On this island, some in one place and some in another, but all are under the snow; have tried to find them since we arrived here, but the snow covers them so deep cannot find even one bone. When snow is gone all the bones can be seen. Did you ever hear of any white men dying on Ke-ki-tuk-ju-a (Montreal Island)? No, never. Did you ever go to the place where the boat with many dead kob-lu-nas were found by the Innuits on the other side of the strait? Yes, I have been there. Where is the place? I now show her Rae's chart, and have shown it to her before, but not for the object I now have. On ascertaining the position of Point Ogle, Miscononchie Isle, and Point Richardson, she puts her finger on the west side of the inlet west side of Point Richardson, and says that was the place where the boat was found. Did you see any bones of white men there? She did; the land low and muddy there; the sea-water close to; saw pieces of the boat, after the Innuits had broken it up. Can bones—skeleton bones—be seen there now, when snow and ice are gone? Answer. She thinks not, for it is so muddy there, and the mud soft, that they have all sunk down into it. She continues: One man's body when found by the Innuits, flesh all on, not mutilated, except the hands sawed off at the wrists; the rest, a great many had their flesh cut off as if some one or other had cut it off to eat.

I now go further on this island than our igloo is, for this woman to show me where she saw the five dead men before they were partially eaten by dogs.

Tuk-pee-too and his wife E-vee-shuk, with one of their little ones, have just taken a walk with me, the woman leading me to the place where the five men died. It is the southeastern end of the island, within 20 fathoms of the shore. I have just marked the spot, on which we shall erect a monument, over which we shall pay our humble tribute to the noble dead.

ONE OF HALL'S CONVERSATIONS WITH IN-NOOK-POO-SHE-JOOK AFTER HIS RETURN FROM KING WILLIAM'S LAND.

JULY 5, 1869.—Another short interview with In-nook-poo-she-jook this morning about ten o'clock, just before he and the Innuits started off on a sealing excursion. Ar-mou assisted me in this brief talk, as Joe and Hannah were both

busily engaged outside of the tent. By the by, I can use quite a number of the Repulse Bay natives to good advantage as interpreters when I talk with natives of distant places, such as Neit-chille, Pelly Bay, and Ig-loo-lik. With the English Admiralty chart before us, I asked In-nook-poo-shee-jook to tell me again where the monument had been erected that had the long stone on top pointing toward Ki-ki-tuk (King William's Land), which he told me about yesterday. He then pointed to the same place as yesterday, to wit, on the coast south side of Inglis Bay, south of the long narrow island which is but a little way east of the mouth of Castor and Pollux River, discovered by Dease and Simpson in 1839, the terminal point of their discoveries in that direction. In-nook-poo-she-jook then placed a board-nail which I had in my hand directly over the spot of the monument, the same nail pointing to Shar-too, and thence on to Point Victory, where another monument had been erected by white men and found by the Innuits. I was not only deeply interested in this particular description of his, but greatly surprised, for he particularly said that the long stone on the top of that monument not only pointed in the direction of Shar-too (Cape Colvile, low land opposite the S. E. extreme of King William's Land) but to the place of the monument that had been erected north side of the inlet at the northwest extreme of King William's Land—that is, at Point Victory. He said that Innuits who saw the said monument south side of Inglis Bay noted what he states.

After seeing the direction in which this nail pointed to the northward and westward, I drew a line in the opposite direction, to the southward and eastward, to see if it might not, if prolonged, come near to Repulse Bay, and found such to be the fact; therefore, the pointing stone may have been intended by those who placed it there to indicate whence they had come and to what place they were bound. But this latter is of my own conjecture, founded upon what In-nook-poo-shee-jook has told, and upon what information has been derived from some of the Repulse Bay and Ig-loo-lik natives.

Before I proceed to note the remainder of the information gained in this morning's interview, I will transcribe a few lines from Dr. Rae's report of his journey of 1854—such part of it as refers to a monument he found in the very locality pointed out as above by In nook-poo-shee-jook. Dr. Rae at the time was in Inglis Bay at the embouchure of Murchison River; when the report reads:

"The weather was overcast with snow when we resumed our journey at 8.30 p. m. On the 27th of April we directed our course directly for the shore, which we reached after a sharp walk of one and a half hours, in doing which we crossed a long stony island of some miles in extent. As by this time it was snow-

ing heavily, I made my men travel on the ice, the walking being better there, whilst I followed the windings of the shore, closely examining every object along the beach.

"After passing several heaps of stones which had evidently covered Eskimo caches, I came to a collection larger than any I had seen, and clearly not intended for the protection of property of any kind; the stones, generally speaking, were small, and had been built in the form of a pillar, but the top had fallen down, as the Eskimo had previously given me to understand was the case. Calling my men to land, I sent one to trace what looked like the bed of a small river, immediately west of us, whilst the other men and myself cleared away the pile of stones in search of a document. Although no document was found, there could be no doubt in my own mind and in that of my companion that its construction was not that of the natives. My belief that we had arrived at the Castor and Pollux River was confirmed when the person who had been sent to trace the apparent stream-bed returned with the information that it was clearly a river.

* * * "Having spent upwards of an hour in fruitless search for a memorandum of some kind, we began to retrace our steps," &c.

I will follow the extract with a remark or two. Taking the story of In-nook-poo-shee-jook and the preceding extract of Rae's report into consideration, it is quite certain that the monument was that of white men.

Now Dease and Simpson give no account in their first report of having erected any mark there—that is, at the place where their discoveries ended—to wit, at Castor and Pollux River; but in the Narrative, Simpson does give the account of raising a monument at the extent of their discovery, viz, Castor and Pollux River. They also state that they erected a monument at Cape Britannia and another at Cape Herschel. To my mind, it appears reasonable that Sir John Franklin's Expedition was not idle after getting beset as it did on the 12th September, 1846, near King William's Land. As the spring of 1847 opened, it is altogether likely that exploring sledge parties were started off, one at least down the west side of King William's land to connect the discoveries of Sir John Ross' expedition with that of Dease and Simpson's, while another, quite likely, proceeded down the east side to connect discoveries that had been made by the same expeditions. Of course, King William's Land was found to be an island, and the whole coast of the mainland (Boothia) from Cape Porter to Castor and Pollux Rivers was most undoubtedly explored and a record of these facts made and cached, in that particular monument referred to by Rae in 1854 and now by In-nook-poo-shee-jook. That some party of Franklin's Expedition visited the east

side of King William's Land, we have the trace in the knife at Cape Livingston which an Innuit found under some stones, as related by In-nook-poo-shee-jook in a late interview, as recorded in this book. I now proceed to note the remainder of the information old In-nook-poo-she-jook communicated in this morning's interview. I asked him where the other monument was with a stone on its top pointing in a certain direction that he had told me about when I first met him. He said it was at Shar-too, at the same time putting his finger on the chart and moving it along down the east coast of Simpson's Peninsula till his finger rested on Point Anderson and Cape Barclay, which are at the entrance north side of Keith Bay, and then he said, "That is E-to-uki," meaning the projections Point Anderson and Cape Barclay. Then he moved his finger carefully along up the coast till he got to Points J. & R. Clouston, or Clouston Points, as they are called in the Admiralty chart, when he said that is where that monument was, and the stone on top was pointing directly towards a small island that is far out to the eastward and northward of where the monument was. He furthermore said that at the time he was there he was on his way to Repulse Bay and he saw about there, tracks of strangers—not Innuit tracks—but then, no monument was there. A short time after, the same season, a party of Innuits passed the same place, and then there was a monument with the stone on top pointing towards the said islet in the offing.

APPENDIX V.

DEMAND FOR WHALE AND SEAL OIL IN THE MANUFACTURE OF JUTE.

APPENDIX V.

WHALE AND SEAL OIL IN THE MANUFACTURE OF JUTE.

It is well known that the vicinity of Hudson's Bay has of late years become less and less inviting to the whaler in place of proving the more and more profitable, as anticipated by Hall for his New London friends. In addition to the special reasons for this, growing out of the shortness of whaling season there, the difficulty of access and of the navigation of the straits and bay, the almost entire disuse of whale-oil for lighting and other purposes will be readily remembered. But it will also be remembered that this disuse was scarcely foreseen by Hall in his sincere and sanguine hopes of opening up new fishing-grounds, asked for by the whalers when he went out.

Yet an exhaustion of the whaling-grounds which are now visited may turn the ships back to Hudson's Bay; nor can any one, to-day, foresee that some new appliances in the advance of the age may not awaken such large and new demands for the oil and the bone as will also justify the revisiting of Hudson's Bay and its inlets.

The following statement of the whale fishery as it was in the year 1865 is taken from the Whalemen's Shipping List.

* * * * * * *

"On the whole, the success of the northern fleet has not been very encouraging, for although oil and bone are commanding apparently high prices, yet almost every article of merchandise has advanced more than our staples, and the enormous expense attending a whaling voyage in these times will require a much larger catch to make any favorable compensation to owners of these vessels.

"Although the weather in the Arctic and Ochotsk has been very boisterous, there have been only two vessels lost the last season—the Henry Kneeland, in the Arctic, and the Mary, in the Ochotsk.

"The success in the Hudson's Bay whaling did not come up to our expecta-

tions the past year. The great difficulty appears to be the short time between the breaking up of the ice and the closing up of the same, rendering the season available for whaling extremely short. Whales seem to be plenty, but they are very shy and difficult to capture. There were four arrivals from Hudson's Bay in 1864—three into New Bedford and one into New London—bringing 3,454 barrels whale-oil and 55,000 pounds bone. There are now wintering in Hudson's Bay and Cumberland Inlet twelve American whalers—the Antelope, Ansel Gibbs, Black Eagle, Glacier, Morning Star, and Orray Taft, Cornelia, George & Mary, Helen F., Monticello, Pioneer, and Concordia,—all of which will probably arrive home next fall.

"Of the American whalers from the north, twenty-three arrived at San Francisco, forty-two at the Sandwich Islands, one at Monterey, and one at Panama. All the foreign whalers arrived at the Sandwich Islands.

"Of the eighty-one whalers which sailed from home ports in 1864, nineteen were bound to the North Pacific, fifteen to Cumberland Inlet and Hudson's Bay, five to Desolation and Hurd's Island, and the balance, sperm-whaling to the Atlantic, Indian, and Pacific Oceans.

"From present appearances, the import of sperm-oil will be considerably less this year than in 1864. The fleet on the Pacific coast is very small, and doing very little, with one or two exceptions. The South Pacific fleet is also much reduced, and has done poorly. Very few ships are in the Indian Ocean. The fleet in the Atlantic has done better, although whaling has been much interrupted about the Western Islands, the "Two Forties" and other grounds by uncommon rough weather. The quantity of oil landed at Fayal in 1864 by whalers is 4,862 barrels sperm, 883 barrels whale; also 1,395 pounds bone. All the oil but about 300 barrels has arrived home.

Exports of sperm-oil, whale-oil, and whalebone from the United States.

Year.	Sperm-oil.	Whale-oil.	Whale-bone.
	Barrels.	*Barrels.*	*Pounds.*
1864	45,000	12,000	530,000
1863	18,866	11,297	279,394
1862	27,976	68,583	1,004,981
1861	37,547	49,969	1,145,013
1860	32,792	13,007	911,226
1859	52,207	8,179	1,707,929

Imports from 1845 *to* 1864.

Year.	Sperm-oil.	Whale-oil.	Whale-bone.
	Barrels.	*Barrels.*	*Pounds.*
1864	64,372	71,863	760,450
1863	65,055	62,974	488,750
1862	55,641	100,478	763,500
1861	68,932	133,717	1,038,450
1860	73,708	140,005	1,337,650
1859	91,408	190,411	1,923,850
1858	81,941	182,223	1,540,800
1857	78,440	230,941	2,058,900
1856	80,941	197,890	2,592,700
1855	72,649	184,015	2,707,500
1854	76,696	319,837	3,445,200
1853	103,077	260,114	5,652,300
1852	78,872	84,211	1,259,900
1851	99,591	328,483	3,966,500
1850	92,892	200,608	2,869,200
1849	100,944	248,492	2,281,100
1848	107,976	280,656	2,003,000
1847	120,753	313,150	3,341,680
1846	95,217	207,493	2,276,930
1845	157,917	272,730	3,167,142

Importation of sperm-oil, whale-oil, and whalebone into the United States in 1864.

Where.	Sperm-oil.	Whale-oil.	Whale-bone.
	Barrels.	*Barrels.*	*Pounds.*
New Bedford	48,172	35,883	224,250
Fairhaven	1,278	711	600
Westport	2,241	32	.....
Dartmouth	500	525	.....
Mattapoisett	881	4	700
Sippican	155	9	.....
District of New Bedford	53,227	37,164	225,550
New London	915	8,091	149,600
Nantucket	78	18	.....
Provincetown	1,850	1,742	2,600
Salem	90	20	.....
Edgartown	153	1,525	15,650
Falmouth	931	232	1,700
Sag Harbor	1,133	505	3,700
Boston	3,894	9,611	159,000
New York	2,101	12,955	202,650
Total	64,372	71,863	760,450

Average prices of oil per gallon and bone per pound.

	Sperm.	Whale.	Bone.
1864	$1 78	$1 28	$1 80
1863	1 61	95½	1 53
1862	1 42½	59⅛	82
1861	1 31¼	44¼	66
1860	1 41¼	49½	80½

THE USE OF WHALE AND SEAL OIL IN THE MANUFACTURE OF JUTE.

The reports of Mr. C. R. Markham, one of the Secretaries of the Royal Geographical Society, London, on the new demand for animal oils in the manufacture of the important article of jute, are in point as regards the new uses and new demands of the day upon the whaler.

Mr. Markham's paper (Parliamentary) awakened an interest in this direction which prompted a request for statistics on the whale trade and its connection with the jute manufacture at Dundee. The full reply to these inquiries made by United States Consul McDougall, through the State and Navy Departments, is here appended as of interest in this twofold relation.

[Extract from Parliamentary Paper 150 on the Moral and Material Condition of India during the year 1872–73, presented to Parliament by C. R. Markham, Esq., 1874.]

"The most valuable special article of export from Calcutta, next to cotton, opium, and rice, is jute. The quantity of jute exported in 1828 was 364 cwt., worth £62, and the extraordinary increase that has since taken place is due solely to the energy of the Ryots of Bengal. They found it profitable, engaged in it with alacrity, and created the trade. The large import of cheap Russian flax into this country at first kept down the demand for jute, but this source of supply was destroyed when the Russian war broke out in 1854, and the demand for jute became brisk. The Ryots seized the opportunity without any prompting or assistance.

"From 1858 to 1863 the average exportation of jute from Calcutta was 967,724 cwt. From 1863 to 1868 it had risen to 2,628,110 cwt. The quantity of raw jute exported in 1872–'73 was 7,080,912 cwt., worth £4,142,547, an increase of nearly a million hundred-weight as compared with the previous year. Thus the Ryots have created and extended an industry in forty-five years to a value of more than four and a quarter millions, without any official encouragement or aid whatever.

"In 1872 there were 3,955,455 cwt. of jute imported into the United Kingdom from India and 69,000 cwt. from other countries. Of this quantity 3,200,455 cwt. are used in Great Britain, almost entirely in Dundee. The remaining 755,000 are re-exported. France takes 148,876 cwt. direct from Calcutta and 550,500 cwt. from England; Trieste takes 9,000 cwt. direct from India; Holland receives 5,357 from India and 58,610 cwt. from England. In 1872 Germany took 77,831; Belgium, 31,192; Spain, 20,768; and other countries, 16,176 cwt. by re-exporta-

tion from England. Large power-mills have also been established for spinning and weaving the fiber under European management in India. At the Barnagpúr Mills, near Calcutta, there were 17 European overseers, 4,700 natives, and the mills work up 16,000 tons of jute in a year. There are also jute-mills at Fort Gloster, down the Hugli; at Budge-budge, at Rishra, at Chapdani, and two at Serampùr. Women and boys are employed in the spinning, winding, and sewing, and men in weaving; the rates of wages being for men 11 annas a day, for women 5 annas 5 pie, and for boys 3 annas 5 pie. The work is practically confined to making gunny bags and cloths, and the total value of the gunny-bags, cloths, twine, and rope exported in 1872–'73 was £835,911. The success of these jute-mills has been very great, and there are also many jute screw-houses and warehouses.

"It is remarkable how various industries, carried on at vast distances, act upon each other. The growth of jute in Bengal led to its manufacture in Dundee, and this caused the revival of the whale fishery in Baffin's Bay. In 1872 the quantity of jute imported direct into Dundee was 1,828,614 cwt., and the bulk of the whale-oil is required by the jute manufacturers of Dundee and its neighborhood.

"Thus the port of Dundee has now become the center of the whale-fishing trade, and cargoes of oil from the Arctic Regions may be seen discharging alongside cargoes of jute from Calcutta, both being essential to the prosperity of this industry. The Dundee Chamber of Commerce has represented that an Arctic expedition is desirable, in order that new haunts of oil-bearing animals may be explored; and if an Arctic expedition will benefit the jute manufacturers of Scotland, it is equally important to thousands of industrious Bengal Ryots, to whom jute cultivation gives employment and the means of subsistence."

REPORT OF UNITED STATES CONSUL MATTHEW McDOUGALL, DUNDEE, SCOTLAND, ON THE JUTE MANUFACTURE AT DUNDEE.

"DEPARTMENT OF STATE,

"*Washington, January* 15, 1878.

"SIR: Adverting to former correspondence upon the subject, I have the honor to inclose herewith, for the information of Professor Nourse, of the Naval Observatory, a copy of a dispatch of the 16th of November last, from the Con-

sul at Dundee, in relation to the whale fishery and jute manufactory carried on at that place.

"I have the honor to be, sir, your obedient servant,

"WM. M. EVARTS.

"The Hon. R. W. THOMPSON,

"*Secretary of the Navy.*"

Mr. McDougall to Mr. Seward, November 16, 1877.

[Inclosure 1 in No. 137.]

CONSULATE OF THE UNITED STATES OF AMERICA,

Dundee, November 16, 1877.

SIR: Referring to your dispatch No. 72, dated the 2d ultimo, and to my acknowledgment of receipt of same per dispatch No. 136, dated the 16th of that month, I have now the honor to send you "statistics of the whale fishery and of the jute manufactory carried on at the port of Dundee for the years 1865 to 1875," which are supplemented by figures relating to the whale fishery for the years 1876 and 1877 and to the jute trade for certain years previous to 1865 and for the years 1876 and 1877. I also give you various other tables connected with the development of these industries, and such information bearing on these subjects as I consider may be useful.

WHALE-FISHING INDUSTRY.

Having entered very fully into this subject in my annual report forwarded to your Department for this year, ending 30th September, I beg to state that the quoted matter under this heading is taken from that document.

"The success attending the whaling-fleet belonging to this port was considerably greater in 1876 than in 1875. All the vessels, twelve in number, prosecuted both seal and whale fishing in 1876. The only change in the course usually followed was by one vessel, which went to Labrador instead of Greenland, with the other ships. The total catch at the seal-fishing was in 1876 57,776 seals, yielding 625 tons of oil. Seal-oil last year was valued at £32 per ton, and the average price for skins was 6*s*. Taking the 625 tons of oil at £32 gives £20,000, and 57,776 skins at 6*s*. each produces the sum of £17,332 16*s*.; so that the value of the seal-fishing in 1876 was £37,332 16*s*. Only one vessel returned clean from the seal-fishing.

The total catch at the whale-fishing was in 1876 64 whales, yielding 824

tons oil and 45 tons of bone. The selling price of whale-oil in 1876 was £35 per ton; and although as high as £1,200 per ton was got for bone, £800 was the average price. The 824 tons of oil produced £28,840 and the 45 tons of bone £36,000; total for the whale-fishing, £64,840; total for the seal-fishing, £37,332 16*s.*; total for both fishings, £102,172 16*s.* Of course from this sum falls to be deducted the expenses of the fleet, which must necessarily be very heavy.

In 1875 the value of the seal-fishing was computed at £27,026 7*s.* 6*d.* and the whale-fishing at £50,325; total for both fishings, £77,351 7*s.* 6*d.* This shows an increase in favor of 1876 in the seal-fishing of £10,306 8*s.* 6*d.* and in the whale-fishing of £14,515; total increase in both fishings for 1876, £24,821 8*s.* 6*d.*"

"This year two vessels went to the seal-fishing in Labrador compared with one in 1876; and they were so successful, that the Dundee Seal and Whale Fishing Company have resolved to form a branch establishment at Newfoundland, and next spring two of their largest and most powerful screw-steamers, instead of going to Greenland, will be dispatched to the Newfoundland seal-fishing. The company has acquired a piece of ground, on which they are erecting the necessary buildings for carrying on the work connected with the fishing, including boiling-house, &c. There being no docks for the accommodation of the vessels, the company is constructing a wharf in close proximity to its premises, so that the steamers will be enabled to discharge their catches almost at the doors of the establishment. With the two steamers sent out by another company here (those which went this year) this will now make four Dundee vessels that will prosecute the Newfoundland seal-fishing next spring. The effect of this change will of course be to give the remainder of the Dundee vessels going to Greenland a better chance of success, and it is hoped the results will prove satisfactory to all concerned.

"As all the vessels of the Dundee whale fleet have now arrived from the Newfoundland and Greenland seal and whale fisheries for the year, I am able to give you the number of seals and whales caught and other particulars. The whole of the vessels (now thirteen in number) went both to the seal and whale fishing this year, two going to Newfoundland instead of to Greenland with the other ships. The number of seals caught in Newfoundland (Labrador) this year was for two vessels 46,600 seals, yielding 750 tons oil; last year one vessel, 4,000 seals, yielding 47 tons oil; increase in 1877, 42,600 seals, 703 tons oil.

"The number of seals caught in Greenland this year was for eleven vessels, 29,400 seals, yielding 342 tons oil; last year, for eleven vessels, 53,776 seals, yielding 578 tons oil; decrease in 1877, 24,376 seals, 236 tons oil.

"The number of seals caught in Newfoundland (Labrador), as above, in 1877, 46,600 seals yielding 750 tons oil; in Greenland, 29,400 seals, yielding 342 tons oil; total, 76,000 seals, 1,092 tons oil. Total in 1876, 57,776 seals, 625 tons oil. Increase in 1877, 18,224 seals, 467 tons oil.

"At present seal-oil is valued at £32 per ton, while the skins average 5*s.* each. Calculating the 1,092 tons of oil got this year at £32 gives £34,944, and 76,000 skins at 5*s.* each yield £19,000; so that the total value of the seal-fishing this year is £53,944. Last year the total value of the catch at the seal-fishing was estimated at £37,332 16*s.* Increase in 1877, £16,611 4*s.*

"Unfortunately five of the eleven vessels that went to the Greenland seal-fishing this year returned clean. But at the whale-fishing there was no such unlucky experience. The thirteen vessels brought from the Greenland whale-fishing this year 81 black whales, yielding 835 tons oil and 42½ tons of bone, and 935 white whales, yielding 120 tons oil; total, 1,016 whales, yielding 955 tons oil and 42½ tons of bone.

"In 1876 the catch was 64 black whales, yielding 824 tons oil and 45 tons of bone. Increase in 1877, 17 black whales, 935 white whales, and 131 tons oil. Decrease in bone in 1877, 2½ tons.

"At present the selling price of whale-oil is £35 per ton, and bone may be taken at the price £1,400 per ton. The value of 955 tons oil at the price given would be £33,425, and the 42½ tons of bone would give £59,500. Total value of the whale-fishing for 1877, £92,925. The total value of the whale-fishing for 1876 was £64,840, making an increase in 1877 of £28,085.

"Total value of the seal-fishing in 1877, £53,944; total value of the whale fishing in 1877, £92,925; total for both fishings 1877, £146,869 (of which sum the expense of the fleet has to be deducted). Total for both fishings in 1876, £102,172 16*s.* Increase on both fishings in 1877, £44,696 4*s.*

"This gratifying result, it will be seen, is greatly due to the remarkable success of the two vessels which went to the Newfoundland (Labrador) seal-fishing this year.

"The following is a very complete statement, showing the produce of British vessels from 1865 to 1876, inclusive, at the Davis Straits and Greenland seal and whale fishing. I also include the number of seals and whales caught this year at Greenland and Labrador by the Dundee vessels."

Statement.

Year.	Ports.	Vessels.	Seals.	Whales.	Seal-oil.	Whale-oil.	Whale-bone.
					Tons.	*Tons.*	*Cwts.*
1865	Peterhead	10 sailers	17,291	5	195	71	.....
	....do	3 steamers	10,248	6	113	84	.....
	Dundee	7 steamers	64,041	50	734	547	650
	Kirkcaldy	1 sailer	.....	.....	.....	.....	.....
	Hull	1 sailer	.....	.....	.....	.....	.....
	....do	1 steamer	.....	5	.....	40	60
	Frazerburgh	2 sailers	12,219	.....	156	.....	.....
	Aberdeen	1 sailer	.....	.....	.....	.....	.....
1866	Peterhead	9 sailers	16,188	31	187	299	.....
	....do	3 steamers	16,632	9	210	100	.....
	Dundee	11 steamers	48,418	30	674	333	373
	Hull	1 steamer	.....	.....	.....	.....	.....
	....do	1 sailer	.....	2	.....	16	40
	Frazerburgh	2 sailers	4,571	.....	62	.....	.....
	Aberdeen	1 sailer	.....	9	.....	100	120
1867	Peterhead	8 sailers	13,208	16	160	151	.....
	....do	4 steamers	21,368	4	287	29	.....
	Dundee	12 steamers	53,822	2	619	22	20
	Hull	1 steamer	.....	2	.....	26	40
	Frazerburgh	2 sailers	8,217	.....	124	.....	.....
	Aberdeen	1 sailer	.....	.....	.....	.....	.....
1868	Dundee	13 steamers	16,458	107	199	856	944
	....do	1 sailer	.....	1	.....	7	5
	Peterhead	8 sailers	13,774	*16	165	262	90
	....do	4 steamers	18,038	4	228	23	17
	Frazerburgh	2 sailers	3,986	.....	32	.....	.....
	Aberdeen	1 sailer	.....	6	.....	80	108
	Hull	1 steamer	230	.....	3	.....	.....
1869	Dundee	11 steamers	44,424	9	458	118	128
	Peterhead	9 sailers	8,868	†8	125	118	49
	....do	4 steamers	16,021	4	256	25	25
	Aberdeen	1 sailer	.....	.....	.....	.....	.....
	Hull	1 steamer	.....	1	.....	5	5
1870	Dundee	10 steamers	87,768	61	862	734	871
	Peterhead	7 sailers	8,373	18	132	125	144
	....do	4 steamers	32,087	.....	487	5	5
	Aberdeen	1 sailer	.....	.....	.....	98	91
1871	Dundee	10 steamers	64,497	133	652	1,163	1,313
	Peterhead	6 sailers	17,047	11	194	105	155
	....do	5 steamers	34,837	8	481	80	76
1872	Dundee	11 steamers	40.391	105	410	969	1,062
	Peterhead	5 sailers	1,851	9	25	131	132
	....do	6 steamers	8,442	24	129	293	292
1873	Dundee	11 steamers	25,480	158	262	1,303	1,344
	....do	1 sailer	4,131	.....	46	.....	.....
	Peterhead	7 steamers	37,827	2	754	16	16
	....do	3 sailers	6,784	12	73	110	115
1874	Dundee	11 steamers	44,087	190	575	1,419	1,436
	Peterhead	5 steamers	8,113	.....	193	95	91
	....do	3 sailers	615	.....	2	148	153
1875	Dundee	12 steamers	44,445	79	418	706	729
	Peterhead	6 steamers	27,198	‡6	355	113	77
	....do	2 sailers	.....	13	.....	156	164
1876	Dundee	12 steamers	57,776	64	625	824	900
	Peterhead	5 steamers	4,180	§13	75	222	138
	....do	3 sailers	371	5	5	69	94
1877	Dundee (Greenland and Newfoundland).	13 steamers	76,000	‖81	1,092	955	850

* And 645 white. † And 859 white. ‡ And 360 white. § And 700 white. ‖ And 935 white.

"It will be observed from the above statement that the whole of the British vessels engaged in the Davis Straits and Greenland seal and whale fisheries now belong to this Consular district, and of these the largest number belong to Dundee, and are all steamers; indeed, sailing-vessels are quite the exception, Peterhead being the only port that has two or three old sailing-ships which go to Greenland, and it is predicted that in the course of a year or two these will either be turned into screw-steamers or laid aside for steam-vessels."

2. JUTE TRADE.

"The staple industry of Dundee and neighborhood is the manufacture of jute fabrics, chiefly of a coarse kind, such as double wrap-bagging, sacking, burlaps, &c. The bulk of the jute used here is turned into this class of goods, or yarns suitable to make the same (these yarns being mainly exported to the European Continental factories, to be there woven into cloth), and the balance into a great variety of other stuffs of a finer description, called duck-padding, canvas, carpets, hearth-rugs, matting, &c.

"The introduction of jute into Dundee with the view to its manufacture was in 1823 or early in 1824; but the first experiments made with it were not satisfactory. Some years elapsed before any further attempts were tried to manipulate the fiber. About the beginning of 1832 repeated efforts were made to overcome the difficulties in spinning jute by machinery, and by perseverance, skill, and improved machinery these obstacles were successfully surmounted, and now jute manufacturing has risen to be the principal business in this town, and has also been a source of great wealth to this community.

"The first noticeable impetus given to the jute trade was caused by the Russian war in 1854. The belligerents on both sides consumed vast quantities of coarse linens. This, together with the supply of flax from that country being cut off, created a strong demand for jute material to take the place of that formerly made from flax. The jute trade still retains in a great measure the advantage it gained at this time, jute fabrics, by their cheapness and strength, having permanently supplanted various kinds of flax-cloth, which it was only considered they would substitute in the emergency. The profits then realized stimulated enterprise very much, and led to the erection of new works in Dundee for spinning and weaving jute exclusively by power, and to substantial additions to those works already in existence.

"The following tables show how many jute factories there were in the United Kingdom in 1862, with the number of spindles, power-looms, amount of moving-

power, and number of persons employed. It will be observed that most of these are in Dundee and district:

Jute Factories in 1862 *in the under-noted countries.*

Country.	County.	Number of factories.	Spindles.	Power looms.	Amount of moving power.		Number employed, male and female.
					Steam.	Water.	
England	Dorset	1	320	.....	12	.....	33
	Lancaster	1	60	.....	20	.....	31
	Middlesex	1	240	.....	18	.....	27
	Surrey	1	.....	.....	12	.....	16
Total		4	620	.....	62	.....	107
Scotland	Forfar (Dundee and district)	24	28,094	406	1,494	20	4,828
	Lanark	2	1,000	48	153	.....	216
	Renfrew	1	1,444	100	90	40	374
Total		27	30,538	554	1,737	60	5,418
Ireland	Antrim	3	1,824	.....	194	.....	385
	Down	2	.....	.....	55	.....	57
Total		5	1,824	.....	249	.....	442
SUMMARY.							
England		4	620	.....	62	.....	107
Scotland		27	30,538	554	1,737	60	5,418
Ireland		5	1,824	.....	249	.....	442
Total		36	32,982	554	2,048	60	5,967

The majority of the workers in jute factories are females, some boys; and a few men to act as overseers, managers, and mechanics are also employed.

The remarkable progress the trade made from 1838 to 1860 is exhibited by the following note of the imports of jute in three years into Dundee. It will be noticed that in 1855, the year after the outbreak of the Russian war, the increase is extraordinary, and that the subsequent years show also a steady increase.

Jute imported into Dundee.

Years.	By sea.	By rail.	Total.
	Tons.	*Tons.*	*Tons.*
1838	1,136		
1839	2,411		
1840	2,745		
1841	2,661		
1842	2,740		
1843	4,858		
1844	5,515		
1845	8,313		
1846	9,230		
1847	6,966		
1848	8,885	20	8,905
1849	7,946	4,196	12,142
1850	6,335	7,745	14,080
1851	7,386	9,542	16,928
1852	9,874	7,109	16,983
1853	8,165	7,235	15,400
1854	6,224	10,366	16,590
1855	12,333	13,561	25,894
1856	16,948	14,083	31,031
1857	8,158	16,184	24,342
1858	13,828	16,258	30,086
1859	21,683	16,722	38,405
1860	22,829	14,136	36,965

"The enormous consumption of coarse goods by both armies in the American war, 1861–'65, gave the next market stimulus to the jute trade. The prices obtained during this war for jute goods were unprecedented in the history of the trade, and they have never since been so high, and those engaged in the trade during this period were thus enabled to amass handsome fortunes. The prosperity gave the trade a firm footing in Dundee, and induced spinners and manufacturers to build more new works and to go on making additions to the old ones. I cannot give you the exact number of jute factories, &c., in operation at the end of the American war, but the next statement proves that there must have been a most favorable increase of jute machinery in these few years, when it is understood that the greater proportion of the total increase here shown refers to the jute trade, and almost solely in this locality."

Return of flax, jute, and hemp factories in Scotland, September, 1867.

Districts.	Number of works.	Nominal horse-power.	Number of spindles.	Number of power looms.	Persons employed.
Forfarshire (Dundee and district)	108	7,715	278,564	11,329	46,571
Fifeshire	51	2,691	74,658	5,038	11,579
Perthshire	17	847	21,054	1,348	3,740
Kincardineshire	5	74	2,818	.....	120
Aberdeen	1	785	16,814	428	2,175
Total	182	12,112	393,918	18,143	64,185
Other parts of Scotland	15	2,840	93,661	1,774	13,010
Grand total	197	14,952	487,579	19,917	77,195
Grand total in 1862	192	.....	312,239	8,520	39,562
Increase	5	.....	175,340	11,397	37,633

"After the American war terminated the trade returned more to its normal condition, but still kept on flourishing to 1873 on account of general trade throughout the world being vigorous. So rapid had been the advancement of the trade in the years 1862 to 1873, that in this last year it was estimated there were upward of 100 jute factories in Dundee and immediate vicinity, employing from 60,000 to 65,000 hands. I here give a table of the amount of the horse-power in the flax, hemp, and jute mills and factories in Dundee *alone* in the years stated. The jute-works may be credited with a large share of the increase shown from the years 1860 to 1874:

Horse-power of mills and factories in Dundee.

	Horse-power.
In 1808	63
In 1820	111
In 1832	805
In 1860	4,782
In 1867	7,032
In 1874	10,000

"Up to 1873 most of the jute consumed in the United Kingdom was in and around Dundee, but the manufacture had now begun to extend in different places in this country, on the Continent of Europe, and more especially in Calcutta and other parts of India. This competition (particularly that of Calcutta), combined with the financial panic in the United States in the autumn of 1873, gave the trade a severe check, and it has continued very depressed ever since, with prices

at the lowest point, and in the principal portion of the trade unquestionably unremunerative.

"It is affirmed that had it not been for the large sums accumulated by the manufacturers in the ten years of good trade previous to 1873, great commercial disaster must have been the inevitable consequence of the very unprofitable state of the trade here during the last three or four years.

"Among those manufacturers who entered into the trade in 1873–'74, when trade was beginning to decline, and who consequently did not reap any of the good profits yielded in former years, there have been many failures. I have again to quote from my annual report for this year:

"So bad has the trade been considered, that many manufacturers have found it more for their interests to close their works entirely than to go on making goods at an absolute loss.

"The chief local newspaper says there are at present standing idle in Dundee and district 12 mills and factories employing 3,400 hands, 7 mills employing 1,770 hands, 4 factories employing 670 hands. Total, 23 mills and factories and 5,840 hands.

"Seven of these works have been closed through the suspension of the firms, but the majority have been stopped voluntarily, by the owners wishing to withdraw from losing concerns and others from the want of orders for the special class of goods manufactured by them. A number of these works ceased working six months ago; some as far back as the end of 1876. Nearly the whole of the works still in operation are running with fewer hands than at this time last year; one firm alone having 600 less."

"So that the number of mills and factories in Dundee and district is now approximated at from 70 to 80, employing from 50,000 to 60,000 hands making jute goods.

"Without doubt the great production of jute fabrics in Calcutta for the last two or three years has been the main cause of the extreme depression of the trade here. At any rate, Calcutta is now the most powerful competitor with Dundee, as three or four of the largest jute-works in other parts of the United Kingdom have recently stopped working, and those in other towns throughout the country are working with less hands, thus reducing the competition in this country with Dundee to a minimum.

"Calcutta is represented as having 20 mills, 4,786 looms; 80 per cent. of the spindles and looms are on double-warp bagging and sacking and 20 per cent. on Hessian or burlap cloth. These figures show that Calcutta is a formidable rival

to Dundee in the manufacture of the coarse stuffs on the making of which this town has always relied. An immense quantity of this quality of cloth is produced in this locality, three-fifths of the mills and factories having machinery only adapted for spinning the yarns for and weaving this cloth."

The Calcutta manufacturers are in the mean time underselling Dundee in the Australian, Egyptian, and Californian markets. Of the last-named place, by far the most important of the three, Dundee once had the monopoly of the business. The total value of the jute-bags exported there, declared to at this consulate, was, for the four quarters of the years ending 30th September, 1875, 1876, and 1877, as follows:

	Quarter ending—				Total for the year.
	December 31.	March 31.	June 30.	September 30.	
1875	$335,440 19	$137,960 78	$3,686 01	$11,586 67	$488,673 65
1876	23,053 24	94,610 65	267,886 44	39,008 90	424,559 23
Increase			264,200 43	27,422 23	
Decrease	312,386 95	43,350 13			64,114 42
1876	23,053 24	94,610 65	267,886 44	39,008 90	424,559 23
1877	21,456 71	6,229 23	2,835 33	1,350 99	31,872 26
Increase					
Decrease	1,596 53	83,381 42	265,051 11	37,657 91	392,686 97
Decrease in 1876					64,114 42
Total decrease in the two years 1876 and 1877					456,801 39

"This demonstrates that at the moment Dundee has entirely lost control of this splendid outlet for its goods. Of course some allowance for this almost incredible decrease may be attributed to the encouragement the San Francisco sack-sewers have in the difference of 10 per cent. in the tariff in favor of burlaps, which they make into bags on the spot. But even in this way Dundee is not compensated for the serious loss (as shown by this statement) it has sustained, as the bag-makers get large parcels of the cloth they use from Calcutta, which source, it is beyond question, must now be supplying California, Oregon, and the Western States with millions of bags and thousands of pieces of cloth yearly which formerly came from this quarter."

To give an idea of the connection Dundee has with the United States in the jute trade, I submit an "extract of my detailed statement of exports from this Consular district to the United States for the four quarters of the year ending

30th September, 1877," which shows a marked decrease during that period. I have also added the decrease for 1876, which makes an enormous falling-off in just two years. I may mention that four-fifths of the total valuation is for jute goods of every sort, but generally of a coarse quality.

Abstract.

	Quarter ending—				Total for the year.
	December 31.	March 31.	June 30.	September 30.	
Total at Dundee for 1877	$1,037,811 87	$1,175,239 41	$1,154,566 08	$1,302,977 08	$4,670,594 44
Total at Aberdeen for 1877	49,169 40	30,506 93	38,134 89	37,182 46	154,993 68
Total from district for 1877	1,083,981 27	1,205,746 34	1,192,700 97	1,340,159 54	4,825,588 12
Total from district for 1876	1,101,294 35	1,459,987 48	1,782,689 49	1,129,172 38	5,473,143 70
Increase				210,987 16	
Decrease	14,313 08	254,241 14	589,988 52		647,555 58
Decrease in 1876					526,769 67
Total decrease in the two years 1876 and 1877					1,174,325 25

"I have also, at this point, to note the fact that a large proportion of the total value of these exports is for goods (burlaps principally) sent to the United States on consignment instead of on actual sale. This has come about by the American firms who are represented here by their own houses or agents declining to purchase. Manufacturers have thereby been compelled to ship their merchandise themselves to keep their establishments moving and from acquiring stock. Business being thus forced has had a disastrous effect on prices in the United States, and the account sales have advised in these cases a wide discrepancy between the prices realized and the actual cost thereof."

By again turning to the importation of jute into Dundee from 1861 to 1877 (former statement left off at 1860) a glance at the undernoted statement will show how the trade has developed in these years.

Total quantity of jute imported into Dundee.

	From foreign (Calcutta).	Coasting (London).	Railway (Liverpool and Glasgow).	Total.
	Tons.	*Tons.*	*Tons.*	*Tons.*
1861	468	17,456	17,792	35,716
1862	402	19,423	18,452	38,277
1863	6,997	25,276	14,710	46,983
1864	12,173	23,371	20,860	56,404
1865	11,425	43,912	16,365	71,702
1866	4,507	28,784	18,888	52,179
1867	10,156	36,546	16,970	63,672
1868	5,437	35,069	17,968	58,474
1869	27,844	36,347	18,188	82,379
1870	30,537	43,341	7,862	81,740
1871	66,872	27,736	8,236	102,844
1872	91,276	32,390	3,524	127,190
1873	102,133	37,790	3,227	143,150
1874	81,746	33,190	2,439	117,375
1875	92,844	20,067	1,019	113,930
1876	95,715	21,824	1,032	118,571
1877 (from 1st January to 31st October, 1877)	72,120	15,921	114	88,155

This statement shows that the jute imported into Dundee reached the maximum in 1873. It also shows that the quantity brought direct from Calcutta is considerably under the amount brought in 1873, in the years 1874, 1875, and 1876.

The total arrivals of vessels from Calcutta at Dundee from the 1st January to 1st October, of this year (1877), were 44 ships, bringing 60,171 tons jute, equal to 401,802 bales. The arrivals during the same period in 1876 were 57 ships, bringing 78,921 tons jute, equal to 527,046 bales, exhibiting a falling off on the nine months' arrivals of 13 ships, bringing 18,750 tons jute, equal to 125,244 bales. Nor is there any prospect of the decrease being made up during the three months of the year still to run. From latest advices, I find that there are at sea bound to Dundee 3 jute vessels of 4,311 tons, and loading or chartered at Calcutta 23 of 31,324 tons. The whole of the vessels at sea are likely to arrive before December 31. Of the ships chartered or loading, 3 steamships of 3,847 register tons and 5,995 tons gross, will also in all probability arrive before the close of the year. The total probable arrivals direct from Calcutta for 1877 may, therefore, be set down at 50 ships of 68,329 tons register.

Taking the vessels arrived, sailed, and chartered, and comparing them with last year, they stand thus: 1876, 90 ships of 126,139 tons; 1877, 70 ships of 95,806

tons; decrease, 20 ships of 30,333 tons. This not only speaks of a bad current year, but promises very poorly for 1878.

It is impossible to get the total yards of jute manufactures or the number of jute bags made that are sent from Dundee, the returns of the Harbor Board and Railway companies being so kept that they only show the total of all manufactures, including linen and jute manufactures of every kind, and yarns, bags, &c. But the extent and importance of the trade can be judged from the following tables, compiled by me from the British Board of Trade returns and other official statements. The year 1854 is the first year jute is given as an article of import into the United Kingdom in the above-mentioned returns. Before that time it was included among "Hemp and other like substances." The quantity of jute exported was not given till 1861. For comparison, I give the quantity of jute imported into Dundee, the amounts being the same as in the preceding tables, but only changed into hundredweights to suit these Tables.

	1854.		1855.		1856.	
	Quantity.	Computed real value.	Quantity.	Computed real value.	Quantity.	Computed real value.
	Cwts.		*Cwts.*		*Cwts.*	
Total quantity and value of the jute imported into the United Kingdom	481,733	£553,993	539,297	£447,167	731,093	£612,290
Total quantity of jute imported into Dundee, consumed there and in the district	331,800	.....	517,880	.....	62[illegible],620	.....
Balance left for consumption elsewhere or export	149,933	.....	21,417	.....	110,473	.....

	1857.		1858.	
	Quantity.	Computed real value.	Quantity.	Computed real value.
	Cwts.		*Cwts.*	
Total quantity and value of the jute imported into the United Kingdom	618,833	£646,356	738,085	£619,668
Total quantity of jute imported into Dundee, consumed there and in the district	486,840	.....	601,720	.....
Balance left for consumption elsewhere or export	131,993	.....	136,365	.....

	1859.		1860.	
	Quantity.	Computed real value.	Quantity.	Computed real value.
	Cwts.		*Cwts.*	
Total quantity and value of the jute imported into the United Kingdom	1,061,288	£790,383	816,787	£660,913
Total quantity of jute imported into Dundee, consumed there and in the district	768,100	.....	739,300	.....
Balance left for consumption elsewhere or export	293,188	.....	77,487	.....

	1861.		1862.	
	Quantity.	Computed value.	Quantity.	Computed value.
	Cwts.		*Cwts.*	
Total quantity and value of jute imported into the United Kingdom	904,092	£709,961	963,774	£930,634
Total quantity and value of jute exported from the United Kingdom	86,971	68,490	114,399	110,586
Leaving in the United Kingdom	817,121	641,471	849,375	820,048
Total quantity of jute imported into Dundee, consumed there and in the district	714,320	.....	765,540	.....
Balance left for consumption in other places of the United Kingdom, or for export next year	102,801	.....	83,835	.....

	1863.		1864.	
	Quantity.	Computed value.	Quantity.	Computed value.
	Cwts.		*Cwts.*	
Total quantity and value of jute imported into the United Kingdom	1,223,033	£1,525,996	2,024,537	£2,192,498
Total quantity and value of jute exported from the United Kingdom	165,634	206,352	270,090	292,598
Leaving in the United Kingdom	1,057,399	1,319,644	1,754,447	1,899,900
Total quantity of jute imported into Dundee, consumed there and in the district	939,660	.....	1,128,080	.....
Balance left for consumption in other places of the United Kingdom, or for export next year	117,739	.....	626,367	.....

	1865.		1866.	
	Quantity.	Computed value.	Quantity.	Computed value.
	Cwts.		*Cwts.*	
Total quantity and value of jute imported into the United Kingdom	2,108,942	£1,774,992	1,625,903	£1,476,244
Total quantity and value of jute exported from the United Kingdom	417,981	351,801	416,352	378,186
Leaving in the United Kingdom	1,690,961	1,423,191	1,209,551	1,098,058
Total quantity of jute imported into Dundee, consumed there and in the district	1,434,040	.....	1,043,580	.....
Balance left for consumption in other places of the United Kingdom, or for export next year	256,921	.....	165,971	.....

	1867.		1868.	
	Quantity.	Computed value.	Quantity.	Computed value.
	Cwts.		*Cwts.*	
Total quantity and value of jute imported into the United Kingdom	1,582,611	£1,414,321	2,182,521	£1,936,230
Total quantity and value of jute exported from the United Kingdom	366,793	327,057	415,266	368,549
Leaving in the United Kingdom	1,215,818	1,087,264	1,767,255	1,567,681
Total quantity of jute imported into Dundee, consumed there and in the district	1,273,440	.....	1,169,480	.....
Balance left for consumption in other places of the United Kingdom, or for export next year	*57,622	.....	597,775	.....

*Taken from previous year's stock left.

	1869.		1870.	
	Quantity.	Computed value.	Quantity.	Computed value.
	Cwts.		*Cwts.*	
Total quantity and value of jute imported into the United Kingdom	2,467,817	£2,143,100	2,376,690	£2,326,910
Total quantity and value of jute exported from the United Kingdom	413,952	358,758	425,712	416,843
Leaving in the United Kingdom	2,053,865	1,784,342	1,950,978	1,910,067
Total quantity of jute imported into Dundee, consumed there and in the district	1,647,580	.....	1,634,800	.....
Balance left for consumption in other places of the United Kingdom, or for export next year	406,285	.....	316,178	.....

	1871.		1872.	
	Quantity.	Computed value.	Quantity.	Declared value.
	Cwts.		*Cwts.*	
Total quantity and value of jute imported into the United Kingdom	3,454,120	£3,729,735	4,041,018	£3,954,698
Total quantity and value of jute exported from the United Kingdom	575,177	650,431	755,120	724,659
Leaving in the United Kingdom	2,878,943	3,079,304	3,285,898	3,230,039
Total quantity of jute imported into Dundee, consumed there and in the district	2,056,880	.....	2,543,800	.....
Balance left for consumption in other places of the United Kingdom, or for export next year	822,063	.....	742,098	.....

	1873.		1874.	
	Quantity.	Declared value.	Quantity.	Declared value.
	Cwts.		*Cwts.*	
Total quantity and value of jute imported into the United Kingdom	4,624,918	£3,619,989	4,270,164	£3,553,179
Total quantity and value of jute exported from the United Kingdom	790,344	649,880	716,631	603,619
Leaving in the United Kingdom	3,834,574	2,970,109	3,553,533	2,949,560
Total quantity of jute imported into Dundee, consumed there and in the district	2,863,000	.....	2,347,500	.....
Balance left for consumption in other places of the United Kingdom, or for export next year	971,574	.....	1,206,033	.....

	1875.		1876.	
	Quantity.	Declared value.	Quantity.	Declared value.
	Cwts.		*Cwts.*	
Total quantity and value of jute imported into the United Kingdom	3,416,617	£2,575,512	3,825,259	£2,804,597
Total quantity and value of jute exported from the United Kingdom	1,050,389	798,146	933,667	704,904
Leaving in the United Kingdom	2,366,228	1,777,366	2,891,592	2,099,693
Total quantity of jute imported into Dundee, consumed there and in the district	2,278,600	.....	2,371,420	.....
Balance left for consumption in other places of the United Kingdom, or for export next year	87,628	.....	520,172	.....

Quantity and value of Jute manufactures exported from the United Kingdom.

Year.	Yarn.		Manufactures.		Bags.	
	Quantity.	Declared value.	Quantity.	Declared value.	Quantity.	Declared value.
	Pounds.		*Yards.*		*Dozens.*	
1861	7,047,217	£85,126	6,519,253	£127,031	642,848	£307,583
1862	6,615,882	96,152	6,959,189	133,149	802,095	388,724
1863	7,391,327	154,618	11,034,412	243,379	894,436	555,282
1864	5,497,603	114,503	13,910,717	356,764	971,871	749,422
1865	4,944,230	82,141	15,400,459	311,540	1,137,862	696,291
1866	7,761,391	128,704	19,394,926	361,857	1,290,677	681,445
1867	7,520,911	117,028	25,745,187	455,396	1,675,321	751,369
1868	8,108,101	126,045	43,081,332	706,936	2,144,593	860,543
1869	8,041,082	126,691	50,127,853	742,801	2,375,865	946,378
1870	12,669,948	196,465	51,920,808	789,657	2,477,334	913,642
1871	13,710,957	262,057	62,310,463	1,026,759	2,897,676	1,206,621
1872	12,715,969	261,239	84,452,457	1,486,484	3,685,092	1,627,026
1873	12,263,805	206,521	95,935,108	1,590,850	4,430,418	1,913,153
1874	15,724,988	245,784	112,810,415	1,679,766	4,700,759	1,750,002
1875	15,942,618	225,836	101,105,579	1,404,997	3,680,073	1,264,308
1876	16,709,239	226,813	120,813,966	1,558,256	4,020,211	1,211,728

By far the largest proportion of these exports are manufactured in Dundee and district, and it must be remembered that these figures do not include the home-trade consumption, which is very large indeed.

The next table gives an estimate of the jute consumption in manufacture in Dundee *alone* in the years named:

	Tons.
In 1836	300
In 1846	9,200
In 1856	31,000
In 1866	50,000
In 1873	139,793

The great expansion of the jute trade has benefited the varied interests of this town, the harbor finances being considerably augmented within the last ten years by the direct importation of jute during that period. The increased revenue thus derived has placed the Harbor-Commissioners in a position to expend a large amount of money in making the docks and the entrance thereto suitable for the entry of the largest vessels into this port, and in building warehouses and providing every facility for the discharge of the jute cargoes; in fact, everything has been done to encourage this direct trade with India. The statement below furnishes evidence that the improvements on the harbor and the ample

dock accommodation which has been opened up in late years have had a powerful influence in fostering the direct importation of jute, which took a sudden start in 1863, the effect indubitably of the healthy state of the trade in that year. I may mention here that all the American vessels that come into this port bring jute cargoes:

Jute vessels arrived in Dundee.

Year.	Number of vessels.	Registered tonnage.	Bales.
1860	1	.....	850
1861	1	576	.....
1862	1	576	.....
1863	8	7,778	.....
1864	15	12,735	.....
1865	10	11,489	.....
1866	5	4,990	.....
1867	10	11,080	.....
1868	5	5,960	.....
1869	28	29,552	.....
1870	26	30,317	207,208
1871	57	69,690	473,097
1872	77	94,450	649,677
1873	81	101,446	709,871
1874	62	77,401	523,197
1875	62	83,252	573,230
1876	63	87,540	582,249
1877 (to September 3)	44	60,171	401,802

As showing how much the harbor revenue has increased by the wise policy referred to adopted by the commissioners, I submit this list:

Harbor dues of Dundee, Scotland.

In 1821	£6,000
In 1841	18,443
In 1858	25,420
In 1868	32,321
In 1873	44,000
In 1875	45,234

The next two statements show the increase in population and value rent of real property in Dundee in the years given, chiefly the result of the great development of the jute trade:

Population of Dundee.		Value rent of real property in Dundee.	
In 1801	27,396	In 1858	£194,690
1841	64,629	1868	368,734
1861	91,511	1873	491,151
1871	118,977	1875–'76	572,168

The facts and figures I have given clearly indicate that the jute trade within the last thirty or forty years has advanced to be a most valuable branch of industry in this country, and also that this trade has contributed not a little to the commercial importance of the nation. It has been shown that the trade has been stagnant here for the past three years, but it is thought at last the prospects of the trade are beginning to look brighter; prices are better and firm, inquiries having been more active during the last month. It is averred, however, that this improvement is not tangible, but created by speculation on the market, and that this fictitious demand will likely soon pass over and leave the business as lifeless as before. This belief, however, is not universal, as one small jute work which has been stopped has been started again last week, and it is rumored that portions of the idle machinery in the jute factories that are working have been recently set agoing.

Advices from America of the restoration of mercantile confidence and sound trade, it is believed, will be the commencement of good trade for Dundee, seeing the connection it has with the United States, and this is adduced as a reason for setting the closed works and idle machinery again in motion. I trust, for the mutual welfare of both countries, these hopes may be fully realized.

I am, sir, your obedient servant,

MATTHEW McDOUGALL,
Consul.

Hon. F. W. SEWARD,
Assistant Secretary of State, Washington, D. C.

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MAP OF THE NORTH POLAR REGION

Wrangell Land, Lat. 70° N.
Long. 180° W.
As seen from Beach Mile of the Jeannette, Sept. 15th, 16th & 17th 1881, 15 to 18 miles distant.
From U. S. Hydrographic Office Chart No. 68.
U. S. N. Rec. Survey Expedition in 881 Comdr. John Rodgers U. S. N.

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